96 00234.9

INSTITUTE OF GOVERNMENTAL
STUDIES LIBRARY

MAR 19 1996

UNIVERSITY OF CALIFORNIA

NOISE ELEMENT
OF THE
COUNTY OF SACRAMENTO
GENERAL PLAN

* * * * * *

December 15, 1993

County of Sacramento

Planning and Community Development Department
General and Advanced Planning Section

*Revised 8/16/95
Refer to Resolution 95-0979

96 00234.9

INSTITUTE OF GOVERNMENTAL
STUDIES LIBRARY

OCT 18 2024

UNIVERSITY OF CALIFORNIA

COUNTY OF SACRAMENTO

County Administration Center
700 - H Street, Room 7650
Sacramento, California 95814

Bob Smith, County Executive

CONTRIBUTING PLANNING DEPARTMENT STAFF

Administration	Planning Staff	Support Staff
Thomas W. Hutchings, Director	Michael Winter, Project Leader	Ray Onga
Robert Sherry	Steve Tracy	Lin Toyama
Tricia Richards	Charles Dyer	Tim Imai
Robert Burness		Lorena Amaro
		Jean Brandon
		Helen McGill

Former Administration

Susan Ziegler, Director
Gary Stonehouse, Principal

Consultant

Brown-Buntin Associates, Inc.

SACRAMENTO COUNTY GENERAL PLAN
NOISE ELEMENT

SACRAMENTO COUNTY GENERAL PLAN

NOISE ELEMENT

TABLE OF CONTENTS

SECTION	TITLE	PAGE
I.	INTRODUCTION TO NOISE ELEMENT	1
II.	GOALS, POLICIES, AND IMPLEMENTATION	
	Goals	5
	Specific Policies	5
	Implementation Measures	11
	Determinations of the Need for and Acoustical Analysis	
	Fixed Noise Sources	12
	Transportation Noise Sources	12
	Airport Land Use Policy	
	Introduction	17
	Process	17
	CLUP Regulations	18
	Application of Land Use Restrictions	18
	Override of Airport Policy	20
	Infill around Mather and McClellan	21
III.	BACKGROUND TO THE NOISE ELEMENT	
	General	31
	Roadways	31
	Railroads	32
	Regional Transit Metro Light Rail	35
	Fixed Noise Sources	37
	Airports	50
	Community Noise Survey	56
IV.	APPENDIX TO THE NOISE ELEMENT	
	Acoustical Terminology (A)	A-1
	Technical Background (B)	
	Description of Noise	B-1
	Criteria for Acceptable Noise Exposures	B-5
	Techniques for Noise Control	B-6
	FHWA Model Input Data (C)	C-1
	Noise Measurement Data (D)	D-1
	Concentrations of Persons Per Acre Standard	E-1

LIST OF TABLES

TABLE	TITLE	PAGE
II-1	Noise Level Performance Standards for Residential Areas Affected by Nontransportation Noise	7
II-2	Requirements for an Acoustical Analysis	7
II-3	Acceptable Noise Levels in Unoccupied Rooms	10
II-4	Distances to 60 dB Ldn Noise Contour for Streets and Freeways	13
II-5	Predicted Noise Results: Sacramento County Railroads	14
II-6	Land Use Compatibility Table for Safety: Public Use Airports	23
III-1	Operational Information and Noise Measurement Results for Sacramento County Railroads	34
III-2	Noise Measurement Results for Sacramento Regional Transit Light Rail	35
III-3	Aircraft Operational Assumptions: Mather Field Scenarios	52
III-4	24-Hour Weekday Noise Measurement Results at Noise Sensitive Areas in Sacramento County	57

LIST OF FIGURES

FIGURE	TITLE	PAGE
II-1	Land Use Compatibility for Community Noise Environments	9
II-2	Distance to 60 dB Ldn Contour, Arterial Traffic	15
II-3	Distance to 60 dB Ldn Contour, Freeway Traffic	16
II-4	Land Use Compatibility for Land Surrounding Airports	22
II-5	Noise and Safety Zones for Mather Air Force Base	25
II-6	Noise and Safety Zones for McClellan Air Force Base	26
II-7	Noise and Safety Zones for Sacramento Metro Airport	27
II-8	Noise and Safety Zones for Rio Linda Airport	28
II-9	Noise and Safety Zones for Franklin Field	29
II-10	Noise and Safety Zones for Sunset Sky Ranch	30
III-1	Railroad Locations	33
III-2	Typical RT Metro Noise Levels	36
III-3	Fixed Noise Sources	39
III-4	Mather Field CNEL Contours, Short-term Demand	54
III-5	Mather Field CNEL Contours, Baseline Demand	55
III-6	Mather Field CNEL Contours, Airfield Capacity	56

LIST OF FIGURES (Continued)

FIGURE	TITLE	PAGE
B-1	Examples of Noise Levels	B-3
B-2	Examples of "Poor" and "Better" Land Use Design	B-9
B-3	Diagram of Acoustical Shielding	B-9
B-4	Example of Acoustically Efficient Interior Design	B-11
D-1	Measured Ambient Noise Levels (24-hour)	D-12
D-2	Community Noise Monitoring Locations	D-16
D-3	Distance to 65 dB Ldn Contours	D-17

SACRAMENTO COUNTY GENERAL PLAN
NOISE ELEMENT

Section I

INTRODUCTION

NATURE OF NOISE POLLUTION IN SACRAMENTO COUNTY

Noise pollution is more illusive than other pollution problems. It is often mobile and it is variable through time and space. Further, noise pollution is a matter of human perception related to personal tolerance and taste. The result is an invisible pollution problem that is ephemeral, localized, and dependent on human perception.

Public surveys taken over the past few years indicate that the average resident of Sacramento County believes noise pollution to be, at most, a minor problem. However, recent years have also given rise to well publicized noise conflicts such as those between Sacramento Metropolitan Airport and residential areas within the City of Sacramento. The future of this rapidly growing county can only bring an intensification of noise conflicts between noise producers and receptors. Without good planning, the "minor" problem in Sacramento County will become a major problem as development occurs.

PURPOSE OF THE NOISE ELEMENT

The purpose of the Noise Element is to protect the citizens of the county from exposure to excessive noise. Further, the Noise Element must protect the economy of the county by preventing encroachment of noise sensitive land uses upon noise producing developments. Both of these tasks are accomplished through policies that limit the noise levels received in residential or other noise sensitive areas, and describe a process for regulating noise.

COORDINATION WITH OTHER ELEMENTS

The Noise Element must be consistent with the Land Use, Circulation, Open Space, and Community Design Elements. The Noise Element contains no specific references to the other Elements, however the policies of the Noise Element apply generally, and when properly used are implicitly consistent with the other Elements.

STRUCTURE AND USE OF THE NOISE ELEMENT

The Noise Element is divided into three independent documents:

- Goals, Policies, and Implementation
- Background to the Noise Element
- Appendices to the Noise Element

The first provides the essentials of the Element, while the others contain background information that justifies the policies and describes the methodology.

Goals, Policies, and Implementation: This section is intended to convey the most important and basic information regarding the regulation of noise-producing and noise-sensitive land uses in Sacramento County.

The policies in the Noise Element define the limits of noise exposure for sensitive land uses. There are policies for noise receptors or sources, transportation or nontransportation noise, and interior and exterior noise. The policies are followed by a section on how to determine when an acoustical analysis is necessary for a given project.

Policies related to the Comprehensive Land Use Plans (CLUPs) for each airport are also discussed in this section. The CLUPs, produced by the Sacramento Area Council of Governments (SACOG), are intended to control land use around airports with regard to noise, safety, and height restrictions. The County has opted to modify the policies of the CLUPs for noise and safety. The land use compatibility tables have been modified, however the maps of safety and noise zones have been retained. The result is a single set of restrictions which apply to all airports in the county, providing much needed consistency to the policies controlling land use around airports.

Safety policies are presented in this section in order to keep policies governing a similar land use together. Evaluating the compatibility of land uses around airports will be facilitated by keeping these sections together.

The County policies regarding height restrictions around airports remain as written in the CLUPs. Sections in the current CLUPs regarding height restrictions around airports are hereby incorporated into this General Plan. The CLUPs may also be consulted for detailed background information on each airport.

Background to the Noise Element: This section is intended to portray the noise problems in Sacramento County and provide an understanding of the methods used in the analysis, thus justifying the policies of the previous section. Transportation sources are discussed, focusing on roadways, heavy rail, and light rail. Policies for these sources are based in part on monitoring of specific sites. Twenty-nine fixed sources of noise are discussed. Some of them are specific and others are intended to be representative of a land use type.

Airports are discussed with a special emphasis on Sacramento Metropolitan Airport and Mather Air Force Base. Special consideration is merited since Metro has been the focus of numerous noise complaints apparently related to aircraft overflights many miles from the airport. The problem is not one that is efficiently handled through the Noise Element, and efforts of the County Department of Airports are directed toward various noise abatement strategies. Mather Air Force Base officially closed September 30, 1993. The new uses for the land are currently being considered by the Sacramento Area Commission on

Mather Conversion (SACOMC), though the land is likely to be used for some type of airport operation.. In lieu of better information, the Noise Element contains three scenarios of airport use, and resulting noise contours for Mather Airport. However, the current CLUP noise contour maps (Figure II-5) are to be used for land use planning purposes until better information becomes available.

The Sacramento County Board of Supervisors held several workshops in 1991 and 1992, regarding the federal government's process for the reuse and disposal of facilities at Mather Air Force Base. Those meetings were informational in nature and no formal actions were taken by the Board. However, for the purposes of the federal government reuse and disposal process, the Board has put forth conceptual plans for both aviation and non-aviation use of Base facilities. The Board has agreed to continue the study of aviation uses at the Base, and endorsed aviation as a preferred use for analysis in the Department of Defense's Draft Environmental Impact Statement.

The Board will further consider the reuse of Mather Air Force Base as federal review continues. The Board may then begin the Sacramento County Planning process through the initiation of amendments to appropriate plans. As that process unfolds, a Airport Master Plan will need to be prepared and adopted. The CLUP will need review subsequent to Master Plan adoption.

Appendices to the Noise Element: The appendices provide more technical background information and data. The background includes a glossary of terms, a description of noise, the criteria for acceptable noise exposures, and techniques for noise control. Also presented are modelling data for the FHWA highway model, the computer modeling results for roadways, data for short-term and long-term noise monitoring. Finally, an appendix defining concentrations of persons per acre is provided from the Sacramento Area Council of Governments.

This Page Left Blank

Section II

GOALS, POLICIES AND IMPLEMENTATION MEASURES

GOALS: 1. **To protect the citizens of Sacramento County from the harmful and annoying effects of exposure to excessive noise.**

2. **To protect the economic base of Sacramento County by preventing incompatible land uses from encroaching upon existing or planned noise-producing uses.**

Policies:

The following specific policies are adopted by Sacramento County to accomplish the goals of the Noise Element. Each policy is immediately followed by the identification of what the policy is intended to regulate, the type of noise source and the type of noise receptor.

NO-1. Noise created by new transportation* noise sources should be mitigated so as not to exceed 60 dB Ldn/CNEL** at the outdoor activity areas of any affected residential lands or land use situated in the unincorporated areas. When a practical application of the best available noise-reduction technology cannot achieve the 60dB Ldn CNEL standard, then an exterior noise level of 65dB Ldn CNEL may be allowed in outdoor activity areas.

Policy Regulates: Noise Sources
Noise Source Type: Transportation
Noise Receptor Type: Residential

Discussion: This policy will provide guidance when new roadways, light or heavy rail-lines are proposed adjacent to residential areas. Mitigation measures such as soundwalls, berms or other attenuation must achieve a 60dB to 65dB Ldn CNEL in the outdoor area for the project to be consistent with this policy.

---

* For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways and railroad line operations. Control of noise from these sources is preempted by Federal and State regulations. Other noise sources are presumed to be subject to local regulations, such as the Sacramento County Noise Control Ordinance. Areas affected by public use airport noise are subject to the Airport Land Use section and individual Comprehensive Land Use Policy.

** See Appendix A for glossary of these and other technical terms.

Further, there may be portions of the county where higher existing levels of ambient noise in residential areas make the 60 dB standard a hindrance to development otherwise typical in the area. In these instances, an exterior noise level of 65 dB Ldn/CNEL may be allowed in outdoor activity areas, provided that all practical exterior noise reduction measures are applied.

NO-2. Noise created by new nontransportation noise sources shall be mitigated so as not to exceed any of the noise level standards of Table II-1, as measured immediately within the property line of any affected residentially designated lands or residential land use situated in the unincorporated areas.

Policy Regulates: Noise Sources
Noise Source Type: Nontransportation
Noise Receptor Type: Residential

NO-3. Where proposed nontransportation noise sources are likely to produce noise levels exceeding the performance standards of Table II-1 at existing or planned residential uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design. (Requirements for the content of an acoustical analysis are given by Table II-2.)

Policy Regulates: Noise Source
Noise Source Type: Nontransportation
Noise Receptor Type: Residential

Discussion: New nontransportation noise sources subject to Policy NO-2. that fall within the 60 dB Ldn/CNEL contours lines portrayed on Noise Environment Map of Sacramento County (see back pocket) are also subject to Policy NO-3. Other circumstances exist which may justify an acoustical analysis including: the need for an analysis of future noise levels, multiple noise sources affecting a site (when single-source noise levels meet the standard), and other situations where there is reason to believe that noise levels are not, or will not remain, within the standards.

Each of the noise standards in Table II-1 shall be decreased by five dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

As an example, a noise source which generates a constant noise level more than 30 minutes in an hour would be allowed to produce 50 dBA at a residential property line during daytime hours, and 45 dBA during nighttime hours. A noise source is allowed to produce a sound of no more than 70 dBA at a residential property line during daytime hours, and 65 dBA during nighttime hours. Note that a single survey of a site may be represented by more than one statistical descriptor, a result of the differing components of most noises. If either

descriptor exceeds the allowed number of minutes in an hour, then the standard is exceeded.

TABLE II-1

NOISE LEVEL PERFORMANCE STANDARDS[1]
FOR RESIDENTIAL AREAS AFFECTED BY NONTRANSPORTATION NOISE[2]

Statistical Noise Level Descriptor	Exterior Noise Level Standards (dBA) Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m to 7 a.m.
L50	50	45
Lmax	70	65

1. These standards are for planning purposes and may vary from the standards of the County Noise Ordinance which are for enforcement purposes. For an explanation of the technical terminology, refer to Appendix A.

2. These standards apply to new or existing residential areas affected by new or existing nontransportation sources.

TABLE II-2

REQUIREMENTS FOR AN ACOUSTICAL ANALYSIS

An acoustical analysis prepared pursuant to the Noise Element shall:

A. Be the responsibility of the applicant.

B. Be prepared by qualified persons experienced in the fields of environmental noise assessment and architectural acoustics.

C. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions.

D. Estimate existing and projected (20 years) noise levels in terms of Ldn or CNEL and/or the standards of Table II-1, and compare those levels to the adopted policies of the Noise Element.

E. Recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element. Where the noise source in question consists of intermittent single events, the report must address the effects of maximum noise levels in sleeping rooms evaluating possible sleep disturbance.

F. Estimate interior and exterior noise exposure after the prescribed mitigation measures have been implemented.

G. Describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures.

NO-4. Where residential land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding either 60 dB Ldn/CNEL or the performance standards of Table II-1, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

Policy Regulates: Noise Receptors
Noise Source Type: Nontransportation and Transportation
Noise Receptor Type: Residential

Discussion: Projects subject to Policy NO-5. or NO-7. which are deemed to fall within the boundaries of the geographical limits set by Figures II-2 and II-3, are also subject to Policy NO-4. Other circumstances exist which may justify an acoustical analysis including the need for an analysis of future noise levels, where multiple noise sources affecting a site (when single-source noise levels meet the standard), or other situations where there is reason to believe that noise levels are not, or will not remain, within the standards.

NO-5. New residential development shall not be allowed where the noise level due to nontransportation noise sources will exceed the noise level standards of Table II-1 (Page 7), as measured immediately within the property line of the new development.

Policy Regulates: Noise Receptor
Noise Source Type: Nontransportation
Noise Receptor Type: Residential

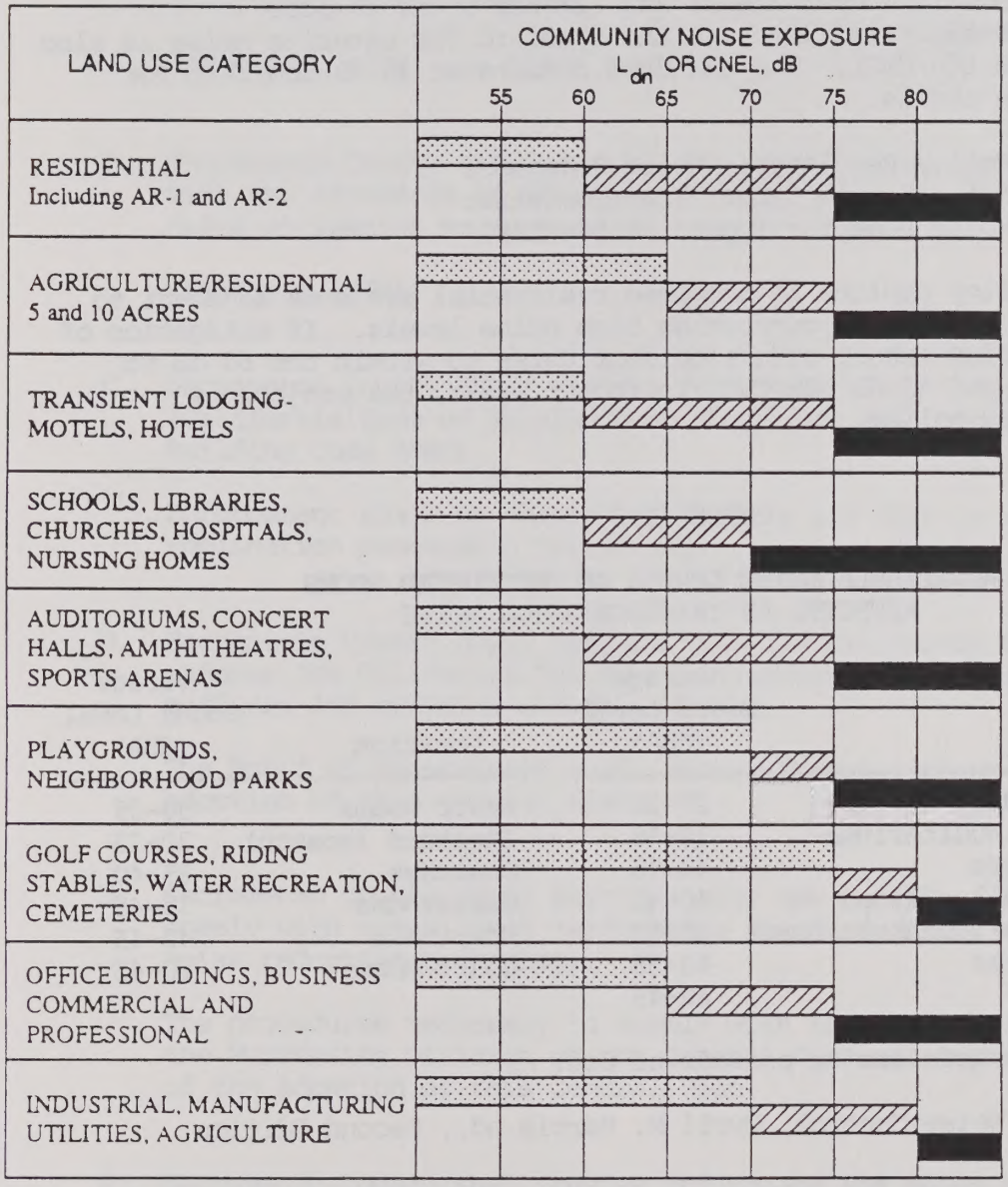
NO-6. The compatibility of proposed nonresidential projects with existing and future noise levels due to transportation noise sources shall be evaluated through a comparison to Figure II-1, "Land Use Compatibility for Community Noise Environments" and Table II-3, "Acceptable Noise Levels in Unoccupied Rooms", and to Figure II-4 for projects affected by aircraft noise.

Policy Regulates: Noise Receptors
Noise Source type: Transportation
Noise Receptor Type: See Figure II-1 & II-4 and Table II-3

Figure II-1

LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

Noise Source: All noise except airport; for Airport Noise compatibility see Figure II-4.



INTERPRETATION

ACCEPTABLE

Specified land use is satisfactory. No noise mitigation measures are required

CONDITIONALLY ACCEPTABLE

Use should be permitted only after careful study and inclusion of protective measures as needed for intended use and to satisfy policies of the Noise Element.

UNACCEPTABLE

Development is not feasible in accordance with Noise Element. Use is prohibited.

This figure is to be used to determine the necessity for an acoustical study based on the exterior, pre-mitigation noise exposure level. Any mitigation must achieve noise levels that are in compliance with the policies of the Noise Element.

NO-7. Proposed development of residential land uses should not be permitted: 1) In areas exposed to existing or projected levels of noise from transportation noise sources which exceed 60 dB to 65 dB Ldn/CNEL unless the project design includes effective mitigation measures to reduce noise to 60 dB to 65 dB Ldn/CNEL or less in outdoor activity areas, and 45 dB Ldn/CNEL or less in indoor areas; and 2) For 5 and 10 acre Agricultural-Residential land use the standard for exterior noise is also 60 dB to 65 dB Ldn/CNEL. The standard remains at 45 dB Ldn/CNEL for interior noise levels.

Policy Regulates: Noise Receptors
Noise Source Type: Transportation
Noise Receptor Type: Residential

Discussion: This policy applies to proposed residential projects adjacent to existing roadways or rail-lines generating high noise levels. If mitigation of the transportation noise cannot reduce outdoor noise to within the 60 dB to 65 dB Ldn/CNEL range and 45 dB Ldn/CNEL in indoor areas, the project is inconsistent with this policy.

TABLE II-3

ACCEPTABLE NOISE LEVELS IN UNOCCUPIED ROOMS
AFFECTED BY TRANSPORTATION NOISE

Location	Average[1] Sound Level (dBA)	Location	Average[1] Sound Level (dBA)
Radio studios, recording studios	25-30	Music Rooms	30-35
Concert halls, large auditoriums	30-35	Theaters (speech)	30-35
Motion picture theaters	40-45	Churches	35-40
Conference rooms, small offices	40-45	Classrooms	35-45
Public offices (large), banks, stores	45-50	Hospitals	40-45
Restaurants, cafeterias	45-55	Court Rooms	40-45
Libraries	40-45		

1. Leq in worst-case hour during periods of use.

Source: Handbook of Noise Control, Cyril M. Harris ed., Second Edition

IMPLEMENTATION MEASURES

To provide a comprehensive approach to noise control which supports the goals of the Noise Element, the following measures are to be implemented:

A. Sacramento County shall develop and employ procedures to ensure that acoustical analyses are included as a part of the project review and building permit processes.

(Planning, SIPS, and DERA)

B. Sacramento County shall develop and employ procedures to monitor compliance with the standards of the Noise Element after completion of projects where noise mitigation measures were required.

(Planning, DERA)

C. Sacramento County shall enforce the State Noise Insulation Standards (California Code of Regulations, Title 24) and Chapter 35 of the Uniform Building Code (UBC).

Enforcement shall be shared by Planning and SIPS as a part of the application processing procedures.

D. Sacramento County shall request that the California Highway Patrol actively enforce the California Vehicle Code sections relating to adequate vehicle mufflers and modified exhaust systems.

The Board of Supervisors shall make a formal request within 180 days after adoption of this General Plan.

E. Sacramento County shall purchase only new equipment and vehicles which comply with noise level performance standards based upon the best available noise reduction technology.

The procedures necessary to comply with this policy shall be developed by the Purchasing Division of the General Services Department within 180 days of the adoption of this General Plan.

F. Sacramento County shall review and update the Noise Element to ensure that noise exposure information and specific policies are consistent with changing conditions within the community and with noise control regulations or policies enacted after the adoption of this Element. The Noise Element shall be reviewed and updated at least every five years.

(Planning)

DETERMINATION OF THE NEED FOR AN ACOUSTICAL ANALYSIS

This section provides general guidelines for determining the need for an acoustical analysis for specific projects. The trigger mechanism is based on the likelihood that the project is affected by noise levels which exceed the standards, or that a project will cause substandard noise levels to expand into a noise-sensitive area. Each likelihood is dependent on the distance between a noise receptor and a noise source, and the estimated level of noise produced, both existing and future. Critical distances have been estimated for specific fixed sources in Sacramento County (Noise Environment Map, back pocket) and generalized for transportation sources (Figures II-2 and II-3). These give an approximation of the existing noise levels, though future noise levels must also be considered.

FIXED NOISE SOURCES

A residential project that is deemed to be located wholly or partially within a noise contour as on the Noise Environment Map shall be subject to an acoustical analysis (Policy NO-3 or NO-4) and sufficient mitigation (Policy NO-2 or NO-5). There may be situations in which there is reason to believe that a project not within a critical noise contour is in fact subject to excessive noise levels. In such cases an acoustical analysis may be required if justified with findings.

TRANSPORTATION NOISE SOURCES

Roadway Noise: Noise contours for these sources are more easily updated since the noise level estimates are based on data which are easily available, or which may be estimated for future conditions. Noise levels are dependent on traffic volume and speed, and the traffic mix (trucks and automobiles). A residential project that is located wholly or partially within a noise zone as described by Figures II-2 or II-3 shall be subject to an acoustical analysis (Policies NO-1 or NO-4) and sufficient mitigation (Policies NO-6 or NO-7).

The procedure to determine the necessity of an acoustical analysis for roadway noise:

1. Determine whether any part of the subject parcel falls within the critical noise zone.

    A. Determine the distance from the center of the roadway to the closest boundary of the subject parcel.

    B. Determine the distance from the center of potential noise-producing roadways to the 60 dB contour line using the appropriate figure.

        1. Roadways considered to be potential noise sources are freeways or arterials. Note that thoroughfares and special thoroughfares may be of the same size as arterials, and should be evaluated using Figure II-3. Roads which have one of these designations in the current roadway system or those which will have a such a designation within the planning horizon (See Transportation Plan) must be considered.

2. The distance from the roadway center to the 60 dB contour line is estimated using the nomograms in Figure II-2 or II-3. The 65 dB CNEL contour line, critical in some instances, can be calculated using Figure D-3 in Appendix D. The Average Daily Traffic (ADT) values for any segment are based on the type of roadway as presented on the Transportation Plan. This will account for the long-term impact of roadway noise. Table II-4 shows the critical distances for roadways of a particular type at a given traffic speed. This is based on the association between the road type and typical traffic volumes at LOS "D/E". The following ADT are to be used for the following road types when using Figure II-2 or II-3, with the resultant distances to the 60 dB Ldn/CNEL noise contour line:

TABLE II-4

Distances to 60 dB Ldn Noise Contour for Streets and Freeways

Road Type	Typical Lane Number	Maximum ADT for LOS "D/E"	Distance to 60 dB Ldn Noise Contour (feet) -Posted Speed- 35	40	45	50	55	65
STREETS								
-Collector	2	13,500	140	170	200	235	270	--
-Arterial	4	27,000	225	270	320	370	430	--
-Thoroughfare	6	40,000	295	350	420	490	560	--
Thoroughfare	8	54,000	360	430	510	590	690	--
							(For Actual Speed) 55	65
FREEWAY*								
-Four Lane	-	76,000	--	--	--	--	1,700	2,000
-Six Lane	-	114,000	--	--	--	--	2,200	2,600
-Eight Lane	-	152,000	--	--	--	--	2,700	3,200
-Ten Lane	-	190,000	--	--	--	--	3,100	3,700

* Freeway noise is dependent on the mix of trucks and automobiles. This table assumes a high level of truck traffic (20%). The distances established here may be reduced when the truck mix can be demonstrated to be of a lower value. Figure II-3 is used to adjust for truck mix.

Railroad Noise: A similar procedure exists for railroad noise as for roadway noise. The distance to the 60 dB Ldn/CNEL noise contour is determined using Table II-5 which is founded on existing operations. Data do not currently exist for future railroad operations, however, significant changes in operation level may require recalculation of Table II-5. The current 60 dB Ldn noise contour lines are represented on Noise Environment Map (back pocket).

TABLE II-5

Predicted Noise Results Sacramento County Railroads

Railroad	Ldn, dB --at 100 feet-- Model*	Computed**	Distance to 60 dB Ldn (feet)
SPRR - North	77	67	1360
- South	74	70	860
- Placerville	57	--	60
- Ione***	--	--	--
UPRR - North	72	70	630
- South	72	69	630
CCTC	57	--	60

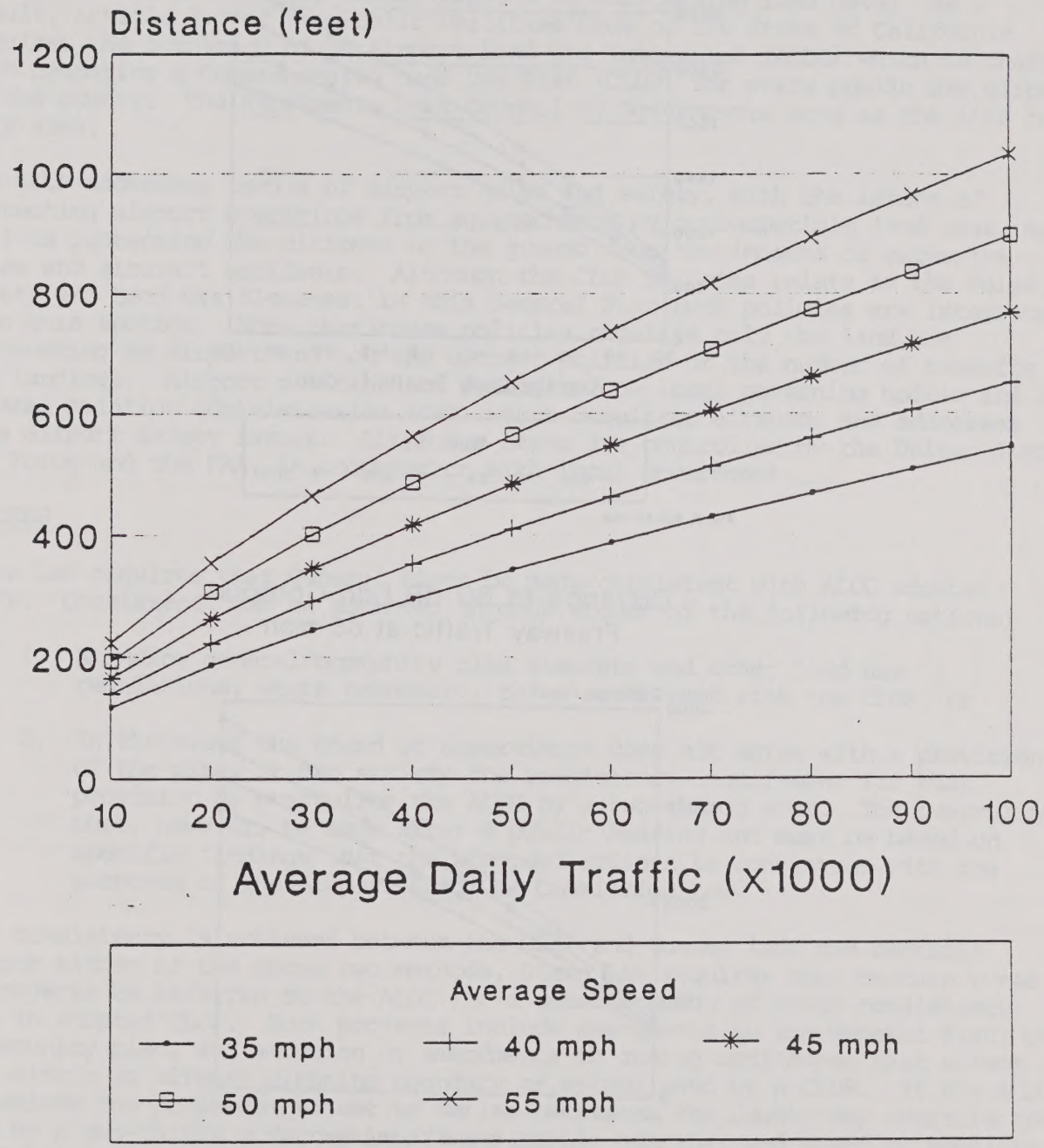
* Ldn values output from assessment procedures of Wyle Laboratories. See Section III for an explanation.

** Ldn values computed from noise measurement results and reported operational data.

*** The Ione branch line is used infrequently by "local" freights, and no specific operational data are available.

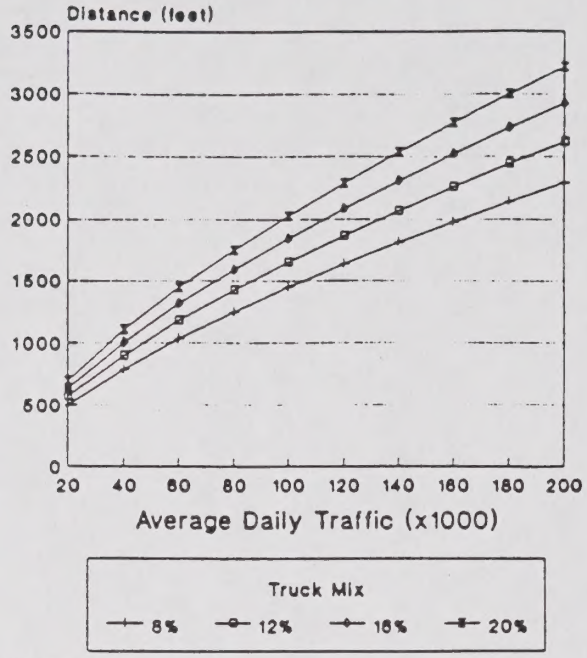
FIGURE II-2

Distance to 60 dB Ldn Contour
Arterial Traffic



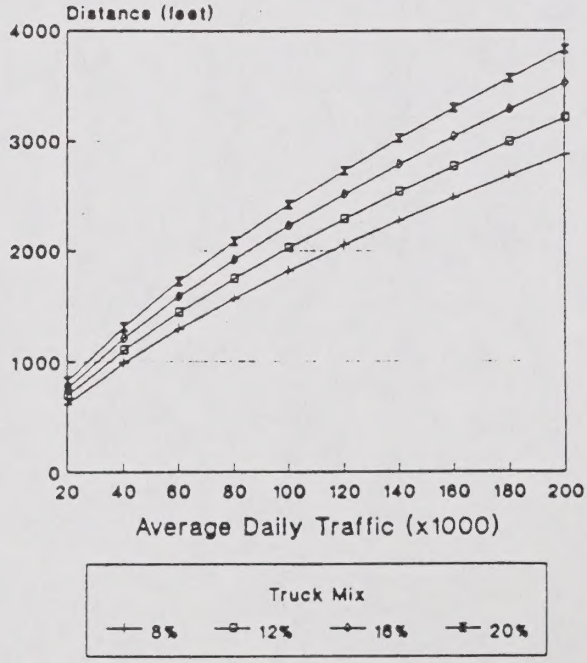
FHWA RD-77-108

Distance to 60 dB Ldn Contour
Freeway Traffic at 55 mph



FHWA RD-77-108

Distance to 60 dB Ldn Contour
Freeway Traffic at 65 mph



FHWA RD-77-108

AIRPORT LAND USE POLICY

INTRODUCTION

Airports occupy a special place in the planning process because of their widespread and potentially severe impacts on surrounding land uses. As a result, Article 3.5 of the Public Utilities Code of the State of California requires the formation of an Airport Land Use Commission (ALUC) which is charged with preparing a Comprehensive Land Use Plan (CLUP) for every public use airport in the county. The Sacramento Area Council of Governments acts as the ALUC for this area.

The CLUP addresses issues of airport noise and safety, with the intent of protecting airport operations from encroachment by noncompatible land uses, as well as protecting the citizens on the ground from the impacts of excessive noise and aircraft accidents. Although the CLUP policies relate to the Noise, Safety and Land Use Elements, in this General Plan such policies are integrated into this section. Note that these policies regulate only the land use surrounding an airport and not the airport policies or the number of takeoffs and landings. Airport policies are determined by local governing bodies and the Federal Aviation Administration (FAA) which regulates airspace and addresses some airport safety issues. Air Force bases are controlled by the United States Air Force and the FAA, in cooperation with local governments.

PROCESS

State Law requires that General Plans be made consistent with ALUC adopted CLUPs. Consistency can be achieved through either of the following actions:

1. Amending general/community plan elements and other land use regulations, where necessary, to be consistent with the CLUP, or

2. In the event the Board of Supervisors does not agree with a provision of the plan, it can satisfy the consistency requirement for that provision by overruling the ALUC by a two-thirds vote. The overruling must, however, be made after a public hearing and must be based on specific findings that the proposed actions is consistent with the purposes of the Airport Land Use Commission Law.

Once consistency is achieved between the CLUP and County land use controls through either of the above two methods, State law requires that certain types of projects be referred to the ALUC for a determination of their consistency with an adopted CLUP. Such projects include amendments to the General Plan, or a community plan, and adoption or amendments to zoning ordinances that affect an area within an airport planning boundary as established by a CLUP. If the ALUC determines the proposed project to be inconsistent, the County may overrule the ALUC by a two-thirds vote, again after a public hearing, and based on specific findings.

The CLUP must be based on either a 20-year master plan or an airport layout plan if the Caltrans Division of Aeronautics makes a determination that the existing

airport layout plan is adequate for use in CLUP preparation. In the case of Rancho Murieta Airport, for which no CLUP currently exists, the restrictions defined by the Policy Plan apply.

CLUP REGULATIONS

The CLUPs regulate land use in three major areas:

Safety Zones: The probability of airplane accidents is highest in the immediately vicinity of airports. Consequently, safety zones are delineated around airports which are associated to restrictions in land use. Ranging from most to least restrictive are the clear zone at the end of each airstrip, the approach/departure zone extending out away from the ends of each airstrip, and the overflight zone extending around the airstrip. The densities of land uses allowed in these zones is inversely related to probability of an accident in the zone.

Noise Zones: Noise that emanates away from airstrips and airplane flight paths is represented by concentric noise contours around the airport. The contours delineate zones where land use is restricted, protecting the citizens on the ground from the detrimental effects of exposure to excessive airplane noise. The contours are constructed using noise samples from around the airport, combined with specific computer noise models which indicate the location of each contour line. The result is a 24-hour day/night average called Ldn or CNEL

The actual noise levels around an airport are a function of the number, time of day, and frequency of operations of each aircraft type. Noise levels are also influenced by the variations in monthly and seasonal flight schedule changes by the airlines. Further, the noise levels received at the ground may vary as a result of atmospheric or surface conditions. However, once adopted as policy, the contours are used to determine compatible land uses around the airport.

Height Restrictions: Buildings surrounding airports are prohibited from intruding into aircraft airspace except when permitted by the California Department of Transportation, Division of Aeronautics. Compliance with the height restrictions is tested by comparing the height of proposed projects with an imaginary surface surrounding each airport. Their imaginary surfaces are based on FAA Regulations (FAR Part 77, Imaginary Surfaces). The height restrictions are not addressed in this section. Refer to the original CLUP for each airport for specific information.

APPLICATION OF LAND USE RESTRICTIONS

The status of a project with respect to land use restrictions around an airport is determined by locating the project site on the adopted maps of zones for height restriction, safety, and noise. Specific restrictions are determined using the tables and charts associated with each zone. A proposed land use for a site that is impacted by both safety and noise must meet both standards to be determined a compatible land use. Failure to meet either standard would result in a finding of incompatibility.

This section contains maps of the two restrictive zones surrounding each airport, enabling the user to get a general idea of the status of a project site with regard to noise and safety zones. However, the official status of a site can only be determined through consultation with the Sacramento County Planning and Community Development Department, Application Processing Division.

Some areas around Mather and McClellan Air Force Bases are substantially developed where noise levels exceed the standards provided here. These long-standing developments are considered to be "legal nonconforming" uses. Regulation of infill development on the remaining vacant parcels in residential and agricultural residential areas is explained below.

Figure II-4 and Table II-6 define restrictions for noise and safety which apply to the following airports in Sacramento County:

Airport

- Mather Airport
- McClellan Air Force Base
- Sacramento Metropolitan Airport
- Rio Linda Airport
- Franklin Field
- Sunset Skyranch

A CLUP has not been prepared for Rancho Murieta Airport, however the airport is under the policies and planning boundaries described in the Policy Plan, prepared by the ALUC, December 1988 and administered by SACOG.

Any project that requires an entitlement and falls within an airport noise or safety zone will be subject to Airport Land Use Policies. Some entitlements, such as setback variances, are unrelated to the density or intensity of the proposed use. Only where the intent of the ALU policies is violated, such as a request for use densities greater than the zoning entitlement, would the ALU policies be invoked to deny the project. An example might be denial of a Use Permit for a church in a residentially zoned area.

Examples of nonconforming* projects subject to ALU policies that may be denied on that basis:

- Rezones to higher density or intensity uses.

* "Nonconforming" with regard to either noise or safety restrictions in the ALUC policies.

- Use Permits for uses of density or intensity above existing zoning entitlements.
- A Parcel or Subdivision Map that would increase the density or intensity of use compared to density and intensity on the original parcel. This is the case even when the proposed map is for densities within the limits of the zoning for the parcel.

Types of nonconforming* projects subject ALU policies that may be approved on that basis:

- Rezones to equal or lower density or intensity uses.
- Variance or Use Permit, if unrelated to density or intensity of use.
- Variance or Use Permit that would not allow a significant increase in intensity or density of use. Infill policy may allow use in spite of zoning and noise and safety policy.
- Lot Reduction Permit or Exception where no significant increase in intensity or density would be realized.
- Special Development Permit where the maximum density proposed does not exceed the density limit of the current zoning.

Examples of nonconforming* projects that are not subject to ALU Policy:

- Build-out to the density or intensity allowed by existing zoning standards for the property.
- Other projects where no discretionary approval is required from the Planning Commissions or the Board of Supervisors.

Footnotes to the tables explain important differences between some airports in some categories of land use. Careful attention to the footnotes is critical to proper use of the figure and table.

OVERRIDE OF AIRPORT POLICY

Normally, projects move through our system on a majority vote basis. Airport Land Use Law, however, requires a 2/3 vote to override any portion of Airport Policy. On a five-member Board that means a 4/5 vote is necessary. So, any project that is incompatible will require at least 4 votes. An override may not be necessary for some incompatible land uses as described below.

* "Nonconforming" with regard to either noise or safety restrictions in the ALUC policies.

INFILL AROUND MATHER AND MCCLELLAN

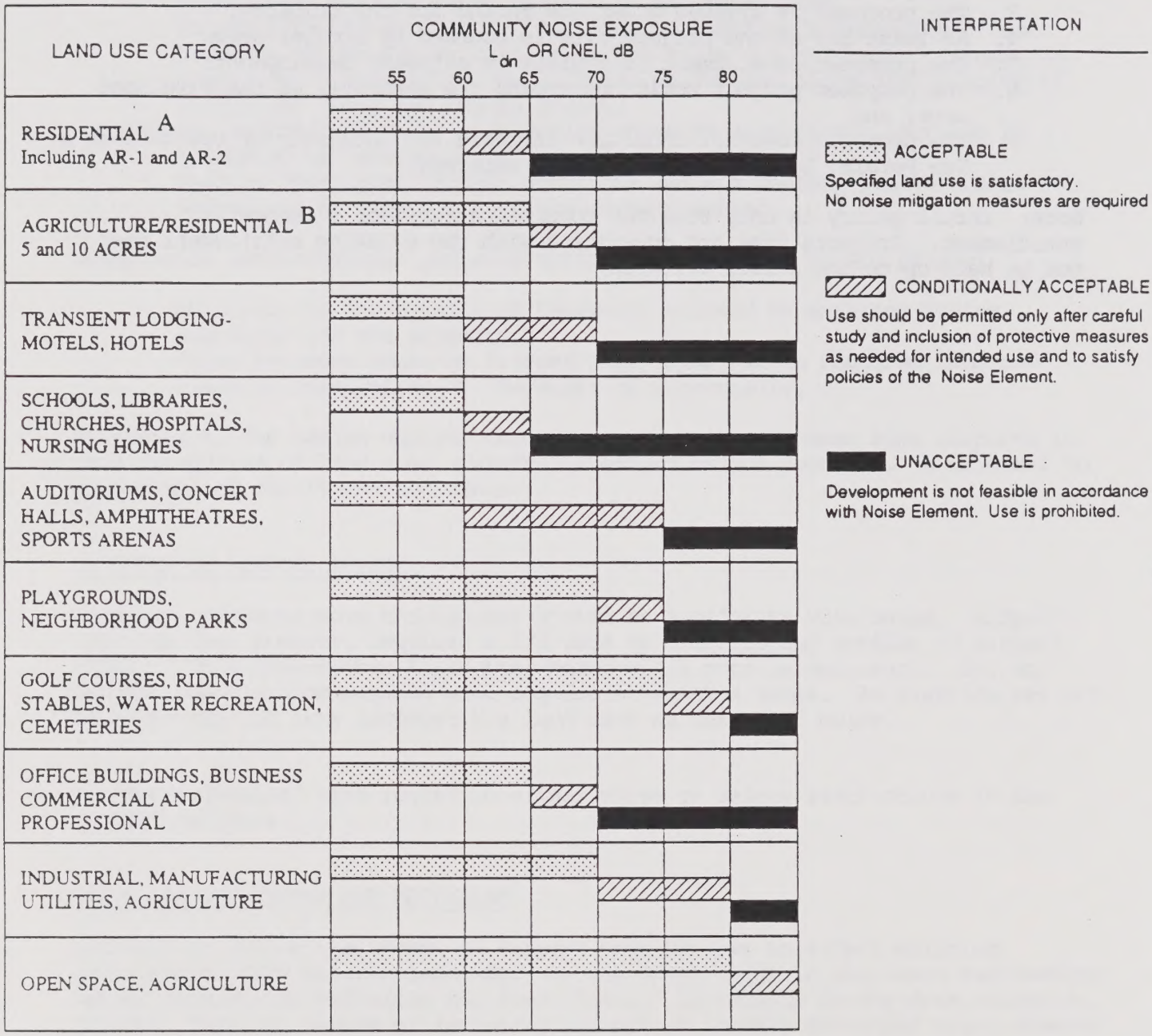
Although it is not the intent of Airport Land Use Law to affect existing development, CLUP restrictions apply to new development in the areas surrounding Mather Airport and McClellan Air Force Bases. Sacramento County does recognize, however, that the owners of remaining parcels in largely developed areas deserve fair treatment. The following criteria are intended to resolve compatibility for "infill" projects which are technically inconsistent with the guidelines regulating new development around the military airports. Projects within the noise and safety overlay zones will be determined to be consistent with Sacramento County Airport Land Use Policy, and not require override for approval, if all of the following apply:

1. The proposal is consistent with the General Plan Land Use Map designation for the property:
2. The proposal is consistent with the applicable Community Plan designation for the property;
3. The proposal is allowed under the zoning for the property;
4. At least 50% of the project site is bounded by similar uses;
5. The proposed development is similar to adjacent development;
6. The proposed project would not expand the perimeter of the developed area; and
7. The proposal does not otherwise increase the intensity of use through a Use Permit, Density Bonus or other strategy.

Note: Infill policy is only relevant to applications for a change in entitlement. Projects that are consistent with the existing entitlement need not be held up to the infill criteria.

Figure II-4

LAND USE COMPATIBILITY FOR LAND SURROUNDING PUBLIC USE AND MILITARY AIRPORTS



A. Limited to 60 dB CNEL at Metro and Franklin except when residential is associated with Agriculture, then residential is acceptable to 65 dB CNEL (with 45dB CNEL interior)

B. Applies to Mather and McClellan only. Agricultural-Residential is treated the same as Residential, at other Airports.

C. Rio Linda Airport. There is no 60 dB CNEL contour for the Rio Linda Airport; therefore, all land uses are acceptable in areas up to 65 dB CNEL contour.

TABLE II-6
LAND USE COMPATIBILITY TABLE FOR SAFETY
PUBLIC USE AIRPORTS

R THE FOLLOWING AIRPORTS: Mather AFB, McClellan AFB, Rio Linda Airport, Franklin Field, Sunset Sky Ranch, and Sacramento Metropolitan Airport

Land Use Category	SAFETY ZONES Clear	Approach	Over Flight
RESIDENTIAL			
• Single Family	No	Yes[2]	Yes
• Duplex, Multi-family (Including Group Quarters, Mobile Home Parks and Courts), Custodial Care Facilities (6+ persons)	No	No	Yes
INDUSTRIAL/MANUFACTURING			
• Food, Animal and Fiber Processing	No	Yes[3,4]	Yes
• Transportation Equipment	No	Yes[3,4]	Yes
• Lumber and Wood Processing, Furniture and Fixtures	No	Yes3,4	Yes
• Paper and Allied Products	No	Yes3,4	Yes
• Printing and Publishing	No	Yes3,4	Yes
• Chemicals, Rubber, Plastic, Petroleum Refining, Allied Products, and Hazardous Waste Facilities	No	No	No
• Stone, Glass and Clay	No	Yes[3,4]	Yes
• Primary and Fabricated Metals	No	Yes[3,4]	Yes
• Electrical and Electronics	No	Yes[3,4]	Yes
• Miscellaneous Manufacturing	No	Yes[3,4]	Yes
• Warehouse and Storage	No	Yes[3,4]	Yes
TRANSPORTATION, COMMUNICATIONS, AND UTILITIES			
• Passenger Terminals	No	No	Yes
• Streets, Roads, Highways, Rail	Yes[10]	Yes[3]	Yes
• Automobile Parking Lots	No	Yes[3]	Yes
• Communications, Radio, TV, Telephone	No	Yes[3,11]	Yes
• Electrical, Gas, Water, Sewer	No	No	Yes
•Truck, Rail Terminals	No	Yes[3]	Yes
• Landfills	No	No	Yes[5]
COMMERCIAL, BUSINESS, AND OFFICE			
• Wholesale, Trade and Distribution	No	Yes[3,4]	Yes
• Retail Trade-General	No	Yes[3,4]	Yes
• Food Retail	No	Yes[3,4]	Yes
• Service Stations	No	No	Yes
• Hotels and Motels	No	No	Yes
• Repair Services	No	Yes[3,4]	Yes
• Personal and Business Services, Banks and Financial Services, Insurance, and Real Estate	No	Yes[3,4]	Yes
• Business Parks and Office Buildings	No	Yes[3,4]	Yes
• Other Retail	No	Yes[3,4]	Yes
• Neighborhood Shopping District	No	No	Yes
• Community Shopping District	No	No	Yes
• Regional Shopping District	No	No	No

Land Use Category	SAFETY ZONES Clear	Approach	Over Flight
PUBLIC AND QUASI-PUBLIC SERVICES			
• Government Services	No	Yes[3,4]	Yes
• Schools	No	No	Yes[4,6]
• Hospitals	No	No	No
• Medical Clinics	No	No	Yes
• Cultural Activities (Including churches, museums, and art galleries), Libraries	No	No	Yes
• Cemeteries	No	Yes[3]	Yes
• Jails, Detention Centers	No	No	No
• Child Care (6+ children)	No	No	Yes
• Other Public and Quasi-Public Services	No	Yes[3,4]	Yes
RECREATION			
• Neighborhood, Community and Regional Parks	No	No	Yes
• Riding Stable and Golf Courses	No	Yes[3,7]	Yes
• Open Space, Natural Areas, and Water Areas	Yes[8,5]	Yes[3,7]	Yes
• Indoor Recreation	No	No	Yes
• Resorts, Campgrounds, Group Campgrounds	No	No	Yes
• Auditoriums, Concert Halls, Outdoor Amphitheaters, Music Shells, Stadiums, Arenas, and Fairgrounds	No	No	No
• Motion Picture Theaters	No	No	Yes[9]
AGRICULTURAL AND MINING			
• Agricultural-Row Crops	Yes[5,8]	Yes[5]	Yes
• Agricultural-Tree Crops	No	Yes[5]	Yes
• Agricultural-Intensive Grazing	No	Yes[5]	Yes
• Pasture and Grazing	Yes[5,8]	Yes	Yes
• Agricultural Services	No	Yes[3]	Yes
• Mining and Quarrying	No	Yes[3,5]	Yes

FOOTNOTES FOR TABLE II-6

1. These guidelines define only those land uses which are compatible within safety areas. Where proposed land uses fall within the established noise contours or may penetrate any of the height imaginary surfaces, additional restrictions apply as contained in the height and noise policy sections of this plan.

2. Single-family detached residential may not exceed a density of one unit per five acres except for Rio Linda Airport where a density of two units per acre or less is allowed. Single-family detached residential shall be a compatible land use for property affected by Sacramento Metropolitan Airport, only if directly related to the agricultural use of the property for the provision of dwelling units for the land owner, the owner's immediate family, or for employees required for the protection of the property.

3. Uses compatible if they do not result in: a) a gathering of individuals in an area that would result in an average density of greater than 25 persons per acre during a 24 hour period, not to exceed 50 persons per acre at any time.

4. Use not allowed for Sacramento Metropolitan Airport.

5. Uses compatible only if they do not result in a possibility that a water area may cause ground fog or result in a bird hazard.

6. Uses compatible only if the requirements of California Education code, Sections 39005-7, 81036, and 81038 are fulfilled.

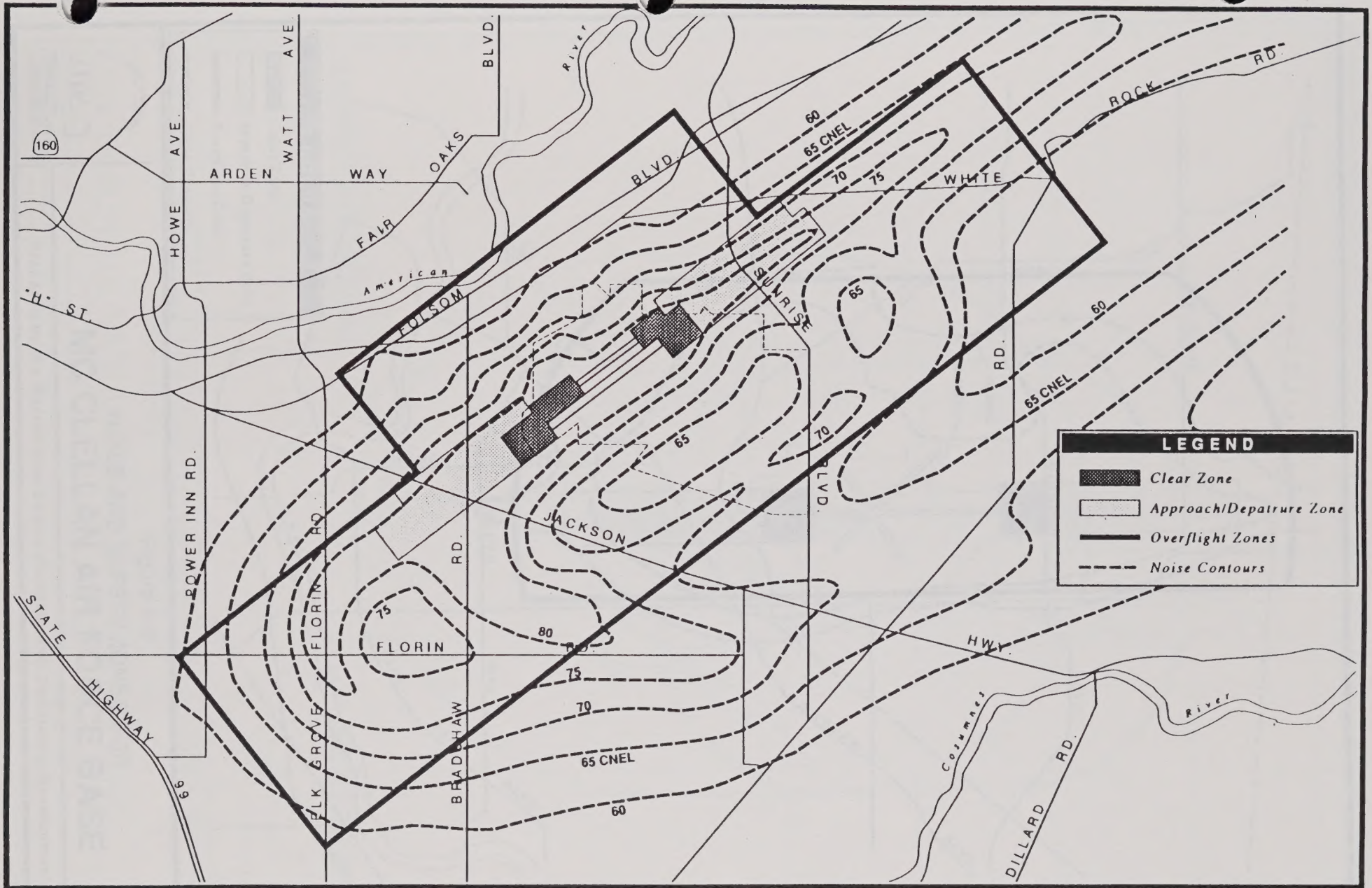
7. No high intensity uses or facilities, such as structured playgrounds, ballfields, or picnic pavilions.

8. No building, structure, above ground transmission lines, or above ground storage of flammable or explosive material, and no uses resulting in a gathering of more than 10 people per acre at any time.

9. Limited to two movie screens per theater.

10. No permanent buildings, structures, above ground transmission lines or storage of flammable or explosive materials above ground and no use resulting in a gathering of more than 10 persons per acre at any time.

11. No above ground transmission lines other than local, low voltage lines used to transmit power from local substations.



NOISE AND SAFETY ZONES FOR

MATHER AIR FORCE BASE

Prepared by the Sacramento County Planning and Community Development Department

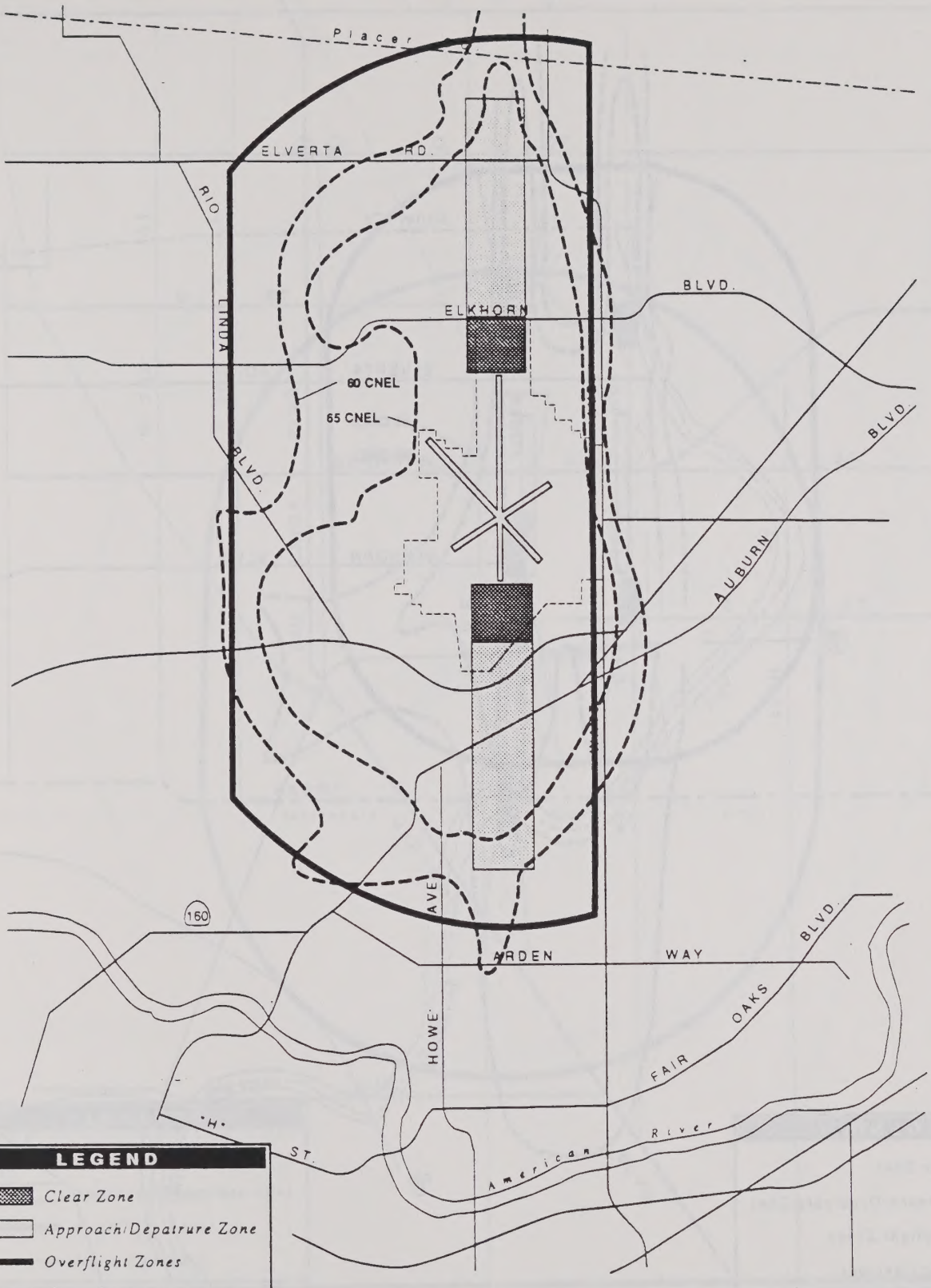
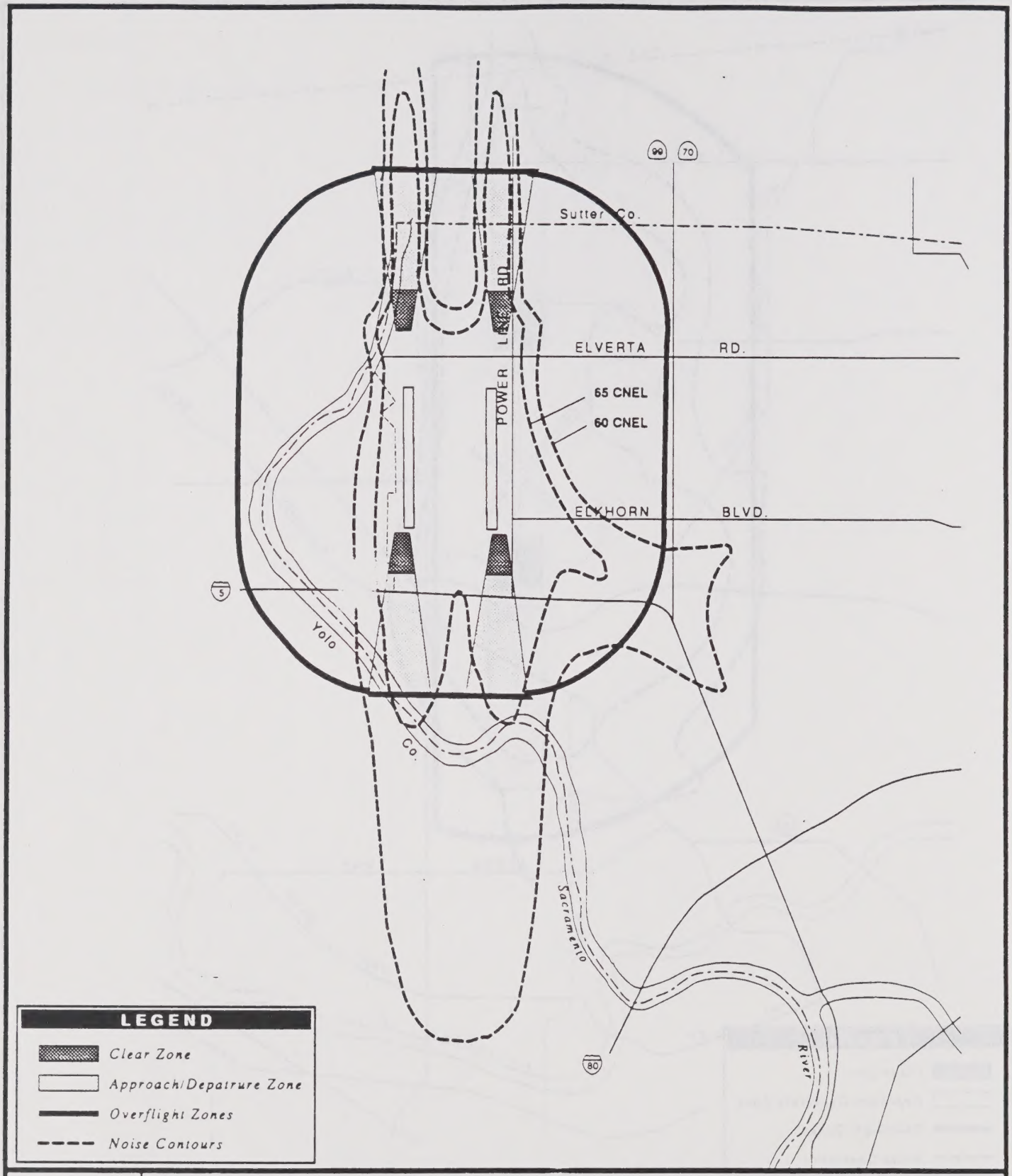


Figure II-6

NOISE AND SAFETY ZONES FOR

MC CLELLAN AIR FORCE BASE

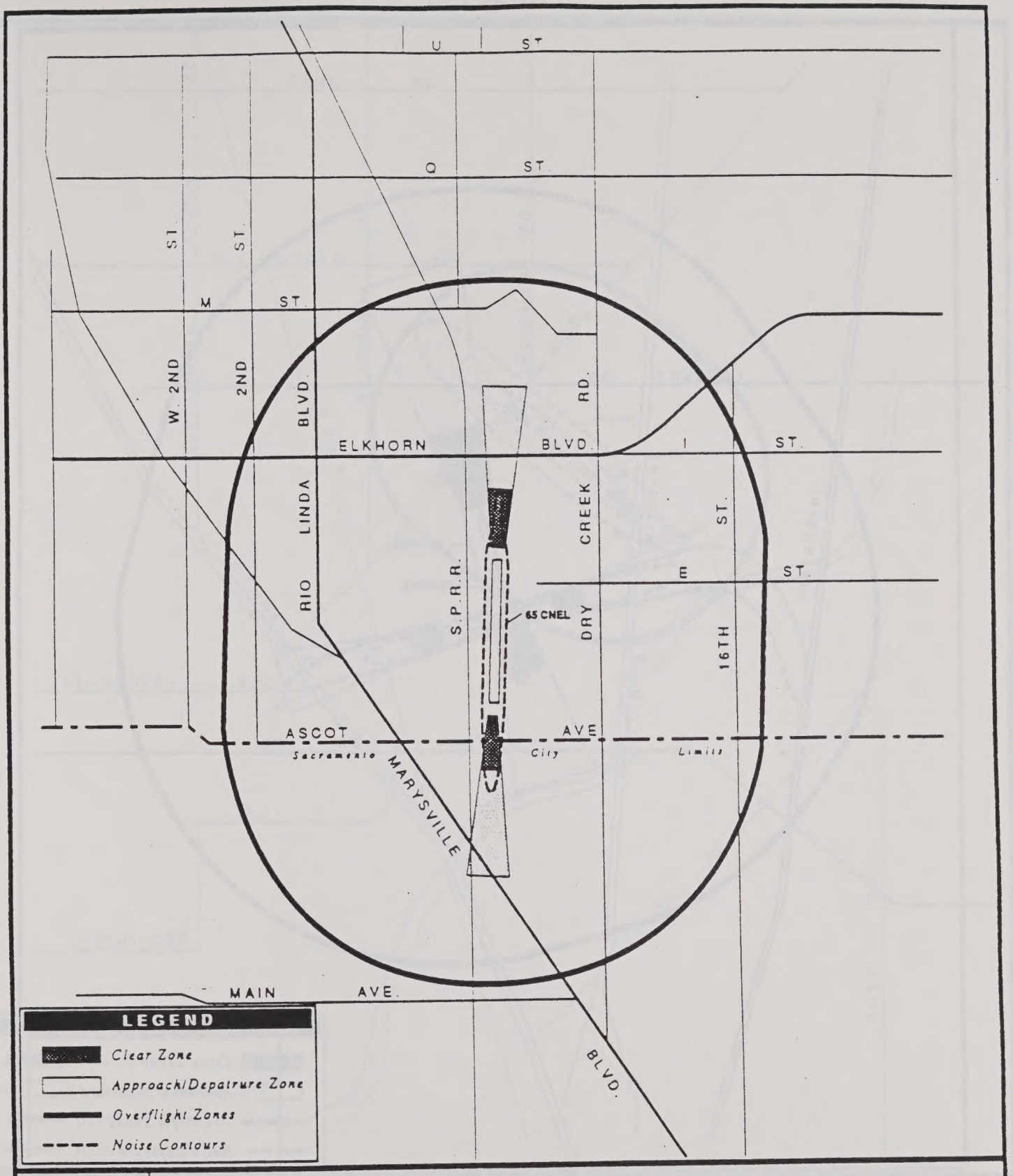
Prepared by the Sacramento County Planning and Community Development Department



NOISE AND SAFETY ZONES FOR

SACRAMENTO METROPOLITAN AIRPORT

Prepared by the Sacramento County Planning and Community Development Department



NOISE AND SAFETY ZONES FOR

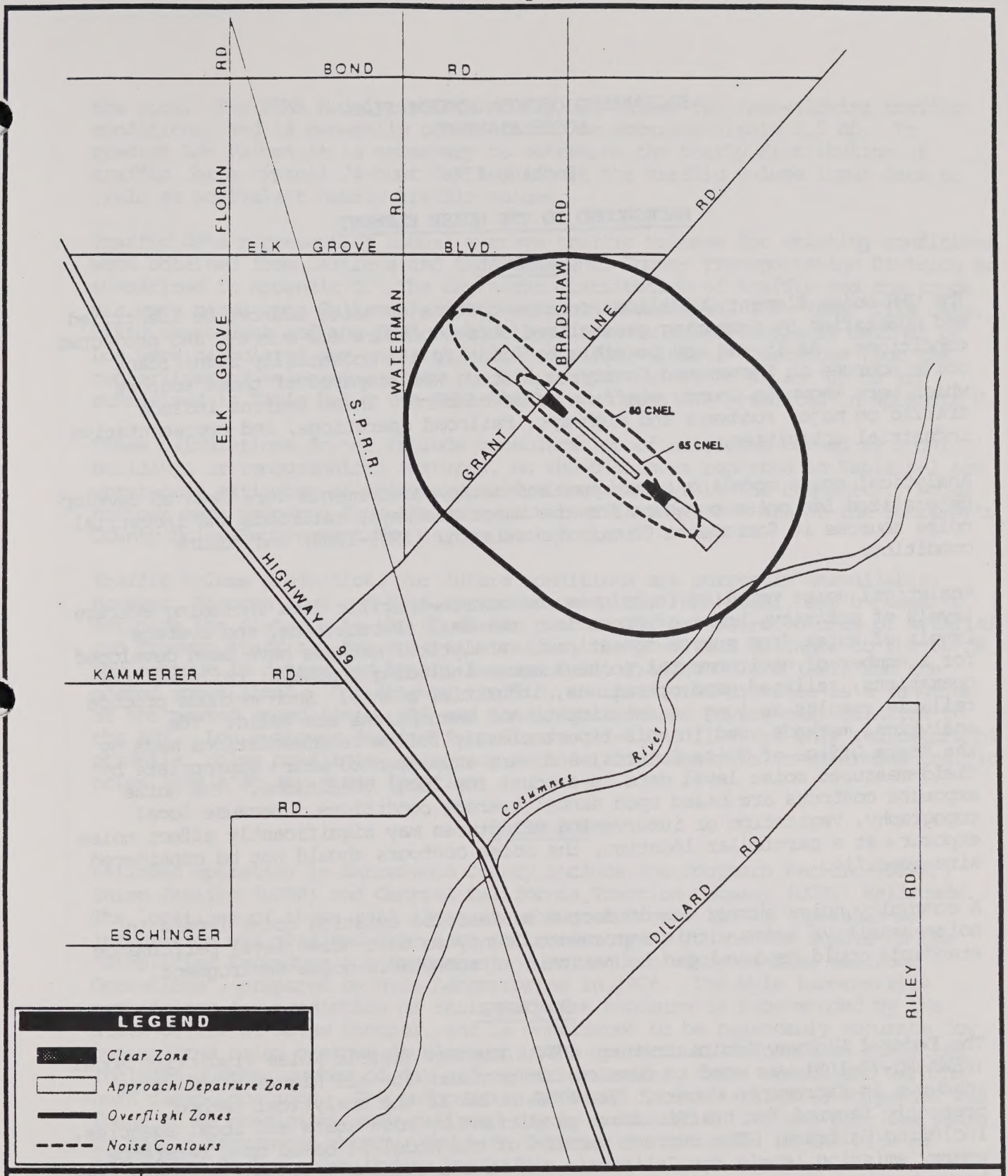
RIO LINDA AIRPORT

Prepared by the Sacramento County Planning and Community Development Department

NOISE AND SAFETY ZONES FOR

FRANKLIN FIELD AIRPORT

Prepared by the Sacramento County Planning and Community Development Department


BOND RD
FLORIN RD
ELK GROVE BLVD
ELK GROVE RD
WATERMAN RD
BRADSHAW RD
LINE
60 CNEL
65 CNEL
GRANT
S.P.R.R.
HIGHWAY 99
KAMMERER RD.
RD.
ESCHINGER
Cosumnes River
DILLARD RD
RILEY RD.
LEGEND
Clear Zone
Approach/Depature Zone
Overflight Zones
Noise Contours
GENERAL PLAN
NOISE AND SAFETY ZONES FOR
SUNSET SKYRANCH
Prepared by the Sacramento County Planning and Community Development Department

Section III

BACKGROUND TO THE NOISE ELEMENT

GENERAL

The OPR Noise Element Guidelines require that major noise sources be identified and quantified by preparing generalized noise contours for current and projected conditions. As it was not possible to identify all potentially significant noise sources in Sacramento County, a listing was prepared of those sources which were known to County staff to be of concern. These sources include traffic on major roadways and highways, railroad operations, and representative industrial activities.

Analytical noise modeling techniques and noise measurements were used to develop generalized Ldn noise contours for the major roadways, railroads and industrial noise sources in Sacramento County for existing (1988-1989) and future conditions.

Analytical noise modeling techniques use source-specific data including average levels of activity, hours of operation, seasonal fluctuations, and average levels of noise from source operations. Analytical methods have been developed for a number of environmental noise sources including roadways, railroad line operations, railroad yard operations, industrial plants. Such methods produce reliable results as long as data inputs and assumptions are valid. The analytical methods used in this report closely follow recommendations made by the State Office of Noise Control, and were supplemented where appropriate by field-measured noise level data to account for local conditions. The noise exposure contours are based upon annual average conditions. Because local topography, vegetation or intervening structures may significantly affect noise exposure at a particular location, the noise contours should not be considered site-specific.

A community noise survey was conducted to describe existing noise levels in noise-sensitive areas within Sacramento County so that noise level performance standards could be developed to maintain an acceptable noise environment.

ROADWAYS

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to develop Ldn contours for all highways and major roadways in Sacramento County. The FHWA Model is the analytical method presently favored for traffic noise prediction by most state and local agencies, including Caltrans. The current version of the model is based upon reference energy emission levels for California and Nevada automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver and the acoustical characteristics of

the site. The FHWA Model predicts hourly Leq values for free-flowing traffic conditions, and is generally considered to be accurate within 1.5 dB. To predict Ldn values it is necessary to determine the hourly distribution of traffic for a typical 24-hour day and adjust the traffic volume input data to yield an equivalent hourly traffic volume.

Traffic data representing annual average traffic volumes for existing conditions were obtained from Caltrans and the Sacramento County Transportation Division as summarized in Appendix C. The day/night distribution of traffic and the truck mix were based upon Caltrans and Brown-Buntin Associates, Inc. (BBA) file data. Using these data and the FHWA methodology, traffic noise levels as defined by Ldn were calculated for existing (1988) traffic volumes. Distances from the centerlines of selected roadways to Ldn contour values of 60 and 65 dB are summarized in Table D-1. The FHWA Model input data are presented in Appendix C.

These calculations do not include consideration of shielding caused by local buildings or topographical features, so the distances reported in Table D-1 are worst-case estimates of noise exposure along roadways in the community. Noise contour maps prepared from the data contained in Table D-1 are on the Sacramento County Noise Environment Map in the back pocket.

Traffic volume projections for future conditions are currently unavailable. However, Figures II-3 and II-4, prepared using the FHWA Model, may be used to estimate the distance to the 60 dB Ldn contour for projected volumes of arterial and freeway traffic. For arterial traffic, the predicted distance to the 60 dB Ldn contour is determined by the Average Daily Traffic Volume (ADT) and the posted speed limit. For freeway traffic, the predicted distance is a function of the posted speed limit, ADT and total truck volume (truck mix) relative to the ADT. Ldn contours derived from Figures II-3 and II-4 are only indicators of potential noise conflicts, requiring more detailed analysis to determine traffic noise levels at any given location.

RAILROADS

Railroad operators in Sacramento County include the Southern Pacific (SPRR), Union Pacific (UPRR) and Central California Traction Company (CCTC) Railroads. The locations of these rail lines are shown on Figure III-1. Operational information was obtained from each railroad company for use as inputs to the "Simplified Procedure for Assessment of Noise Emitted by On-Line Railroad Operations", prepared by Wyle Laboratories in 1974. The Wyle laboratories methodology for prediction of railroad noise exposure is recommended by the State Office of Noise Control, and is considered to be reasonably accurate for generalized noise contour development. The operational information collected included average number of day and nighttime trains, train speeds and warning horn usage locations. The information obtained from the railroad companies was found to be consistent with railroad counts conducted during the past few years by BBA in Sacramento County, and with information contained in the City of Sacramento General Plan Update Draft EIR.

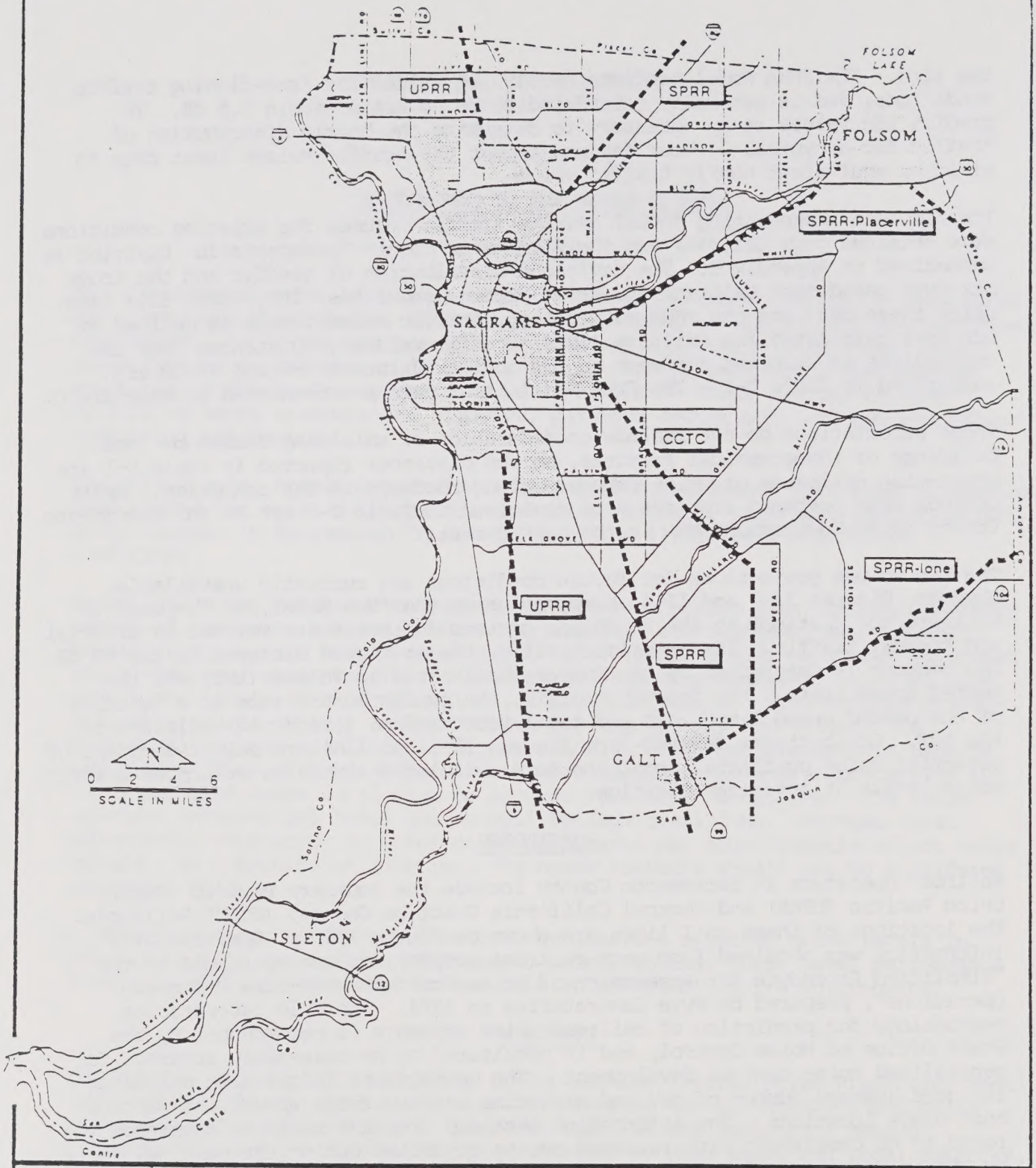


Figure III-1

RAILROAD LOCATIONS

Prepared by the Sacramento County Planning and Community Development Department

To ensure that railroad noise modeling methods would accurately portray noise levels in Sacramento County, noise measurements were performed at several locations in the county. Single event noise level information collected at each measurement site included the maximum noise level, duration and Sound Exposure Level (SEL) of each train passage. The reported and observed number of operations, and the noise measurement and prediction results are contained in Table III-1.

TABLE III-1
Operational Information and Noise Measurement Results
Sacramento County Railroads

Railroad	Total Daily - Trains - Rptd	obsd	Nighttime - Trains - Rptd	Obsd	Ldn, dB --at 100 feet-- Wyle	Computed*	Distance to 60 dB Ldn Noise Contour
SPRR - North	40	37	16-20	23	77	67	1360
- South	20	19	8-10	8	74	70	860
- Placerville	2	-	0	-	57	-	60
- Ione	N/A**	-	-	-	-	-	-
UPRR - North	15	17	5	7	72	70	630
- South	15	7	5	3	72	69	630
CCTC	2	-	0	-	57	-	60

* Ldn values computed from noise measurement results and reported operational data.

** The Ione branch line is used infrequently by "local" freights, and no specific operational data are available.

The data contained in Table III-1 show good agreement between the number of reported and observed railroad operations in Sacramento County. The Wyle methodology, however, overpredicted noise levels at each of the noise measurement locations. This difference occurs because the Wyle methodology tends to provide a slightly conservative estimate of railroad noise exposure, and because the methodology requires adjustment for site specific factors which affect sound transmission. In the case of the northern SPRR segment, the measurement data reflect trains moving more slowly than expected because of the proximity of the major SPRR yard in Roseville. Furthermore, excess ground absorption, slow train speeds and partial shielding of railroad tracks could have contributed to the differences between the levels computed from noise measurement data and the levels predicted by the Wyle methodology. A reasonable estimate of railroad noise exposure can be obtained by application of the Wyle methodology, but an accurate assessment of noise impacts requires noise measurements to supplement the modeling process. The Ldn values obtained through application of the Wyle methodology were used to estimate railroad noise

levels in Sacramento County. These levels must be verified by on-site railroad noise measurements and adjusted where necessary. At locations where railroad warning horns are used, the resulting Ldn values will be approximately 5 dB higher than shown by Table III-1. The 60 dB Ldn contours for current Sacramento County railroad line operations are shown in the Noise Environment Map (back pocket).

The railroad operators reported that there are currently no plans for expansion in the next 20 years on the SPRR Placerville and Ione branch lines or the CCTC main line. Although there are no specific plans for expansion on the SPRR and UPRR main lines, officials at those companies report that they will expand as demand dictates. It is not expected that future railroad operations will be significantly different from existing operations. If railroad operations double in the future, the predicted Ldn values in Table III-1 would increase by 3 dB.

REGIONAL TRANSIT METRO LIGHT RAIL

The Regional Transit (RT) Metro operates in Sacramento County on the light rail lines between Watt Avenue and Butterfield Way. The remainder of the RT Metro trackage is located within the Sacramento City limits. Because the Metro is electrically driven, noise emissions are substantially lower than those produced by standard diesel locomotives.

Noise measurements were conducted in 1989 between Mayhew Road and Butterfield Way to quantify typical RT Metro noise emissions. A chart recording for a typical RT Metro passage is shown in Figure III-2. The mean sound exposure level, the calculated weekday Ldn, and the distance to the 60 dB Ldn noise contour are presented in table III-2.

TABLE III-2
Noise Measurement Results
Sacramento Regional Transit Light Rail*

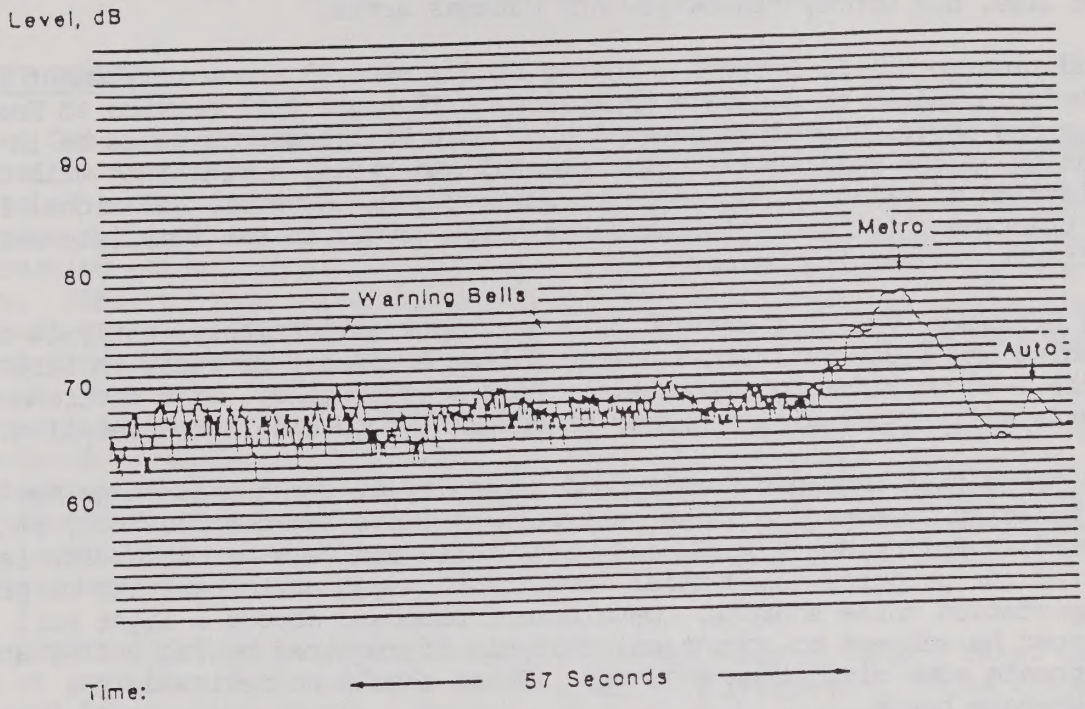
Proximity to Intersection with Warning Bells	Mean Sound Exposure Level at 50 feet	Calculated Weekday Ldn at 50 feet	Distance to 60 dB Ldn Noise Contour
More than 50 feet	82 dB	56 dB	30 feet
Within 50 feet	87 dB	61 dB	60 feet

* Data provided by RT staff indicate that Light Rail operates every 15 minutes from 5:30 am to 7:00 am and every 30 minutes from 7:00 pm to 12:30 am.

Figure III-2

TYPICAL RT METRO NOISE LEVELS

50 Feet From Railroad Centerline



The Regional Transit Planning Department was contacted to quantify future RT Metro operations. Mr. Richard Mendez reported in December 1989 that there is an eighteen month Regional Transit System Planning Study underway which is scheduled for completion in February of 1991. The focus of the study is the expansion of Light Rail service to meet the transportation needs of the Sacramento area in the Year 2010. Thirteen segments of expanded Light Rail service are being evaluated in the study. Included are segments in the Sunrise, Grant Line, Elk Grove, Meadowview and Natomas areas.

In addition to the RT Systems Planning Study, several route refinement studies are being prepared to evaluate expansion of RT Light Rail service to Roseville, Folsom and Davis. Therefore several new Light Rail segments could be in operation by the Year 2010. Environmental and fiscal constraints will prevent utilization of all thirteen segments under study. However, additional Light Rail trackage will result in increased noise levels in the immediate vicinity of the tracks and warning bells.

As of February 1992, Regional Transit has begun environmental analysis of extending the light rail lines up the Folsom Boulevard corridor to Hazel Avenue and the I-80 corridor to the Antelope Road overcrossing. That environmental analysis will also review a number of transit stops under consideration.

It is noted that land use density and intensity at light rail stops may conflict with policies to separate those uses when they are adjacent to heavy rail lines. As noted in Policy No-4, No-6, and No-7, noise analysis or mitigation is required for proposed residential development adjacent to existing or proposed transportation noise sources. Development proposed around a light rail transit stop must be subject to acoustical analysis if required by Table II-1 and incorporate some mitigation measures. These should be reviewed on a case-by-case basis.

FIXED NOISE SOURCES

The production of noise is a result of many industrial processes, even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by Federal and State employee health and safety regulations (OSHA and Cal-OSHA), but exterior noise levels may exceed locally acceptable standards. Commercial and recreational activities can also produce noise which affects adjacent land uses.

From a land use planning perspective, fixed-source noise control issues focus upon two goals: to prevent the introduction of new noise-producing uses in noise-sensitive areas, and to prevent encroachment of noise sensitive uses upon existing noise-producing facilities. The first goal can be achieved by applying noise performance standards to proposed new noise-producing uses. The second goal can be met by requiring that new noise-sensitive uses in proximity to noise-producing facilities include mitigation measures to ensure compliance with noise performance standards.

The following descriptions of existing fixed noise sources in Sacramento County are intended to be representative of the relative noise impacts of such uses, and to identify specific noise sources which should be considered in the review of development proposals. The locations of these noise sources are shown by Figure III-3. Noise contours for fixed noise sources are in the Sacramento County Noise Environment Map (back pocket), and are described in terms of the performance standards of the Noise Element.

AEROJET GENERAL

Aerojet General Corporation is located south of Highway 50 between Nimbus Road and Prairie City Road. Operations at this facility include the manufacture and testing of rocket and high performance aircraft engines for use in military and aerospace applications. The Aerojet operations having the greatest potential for creating noise impacts are the testing of large-scale rocket engines and motors. Other on-site noise sources resulting from industrial operations such as manufacturing, cleaning, maintenance, heating and cooling, and pollution control also contribute to the noise environment.

An acoustical analysis of on-site industrial noise sources was prepared by Brown-Buntin Associates, Inc. (BBA) in 1982. This analysis indicated that operations at Aerojet, excluding rocket test firing, did not result in apparent noise conflicts with surrounding land uses. In all cases, non-rocket related noise levels measured off Aerojet property were below the noise criteria currently employed by Sacramento County.

Noise produced by rocket engine testing will typically include a brief impulsive noise at ignition, followed by a few seconds to approximately three minutes of sustained lower noise levels. Rocket engine testing is normally conducted during daytime hours. The levels of noise resulting from Aerojet's rocket test activities are neither constant nor identical from day-to-day.

Studies prepared by BBN Laboratories in 1988 document noise levels resulting from Titan rocket motor and small second stage ICBM rocket motor test firings at Aerojet. The study results concluded that the 65 and 75 dBA noise contours would be located approximately 13,500 and 7800 feet from the test stand during firing of a 500,000 lb. thrust Titan rocket motor. During firing of a small second stage ICBM rocket (60,000 lb. thrust) the 65 and 75 dBA contours would be located approximately 7920 and 4224 feet from the test stand. These contour distances are offered as worst case estimates of noise exposure during the rocket tests and do not consider the effects of shielding by intervening buildings and topography, wind direction, or atmospheric absorption. The approximate location of the worst case 75 dBA noise contours for those Aerojet rocket tests are shown in the Noise Environments Map (back pocket).

Contact: Penelope Bell, Manager of Land Use Planning

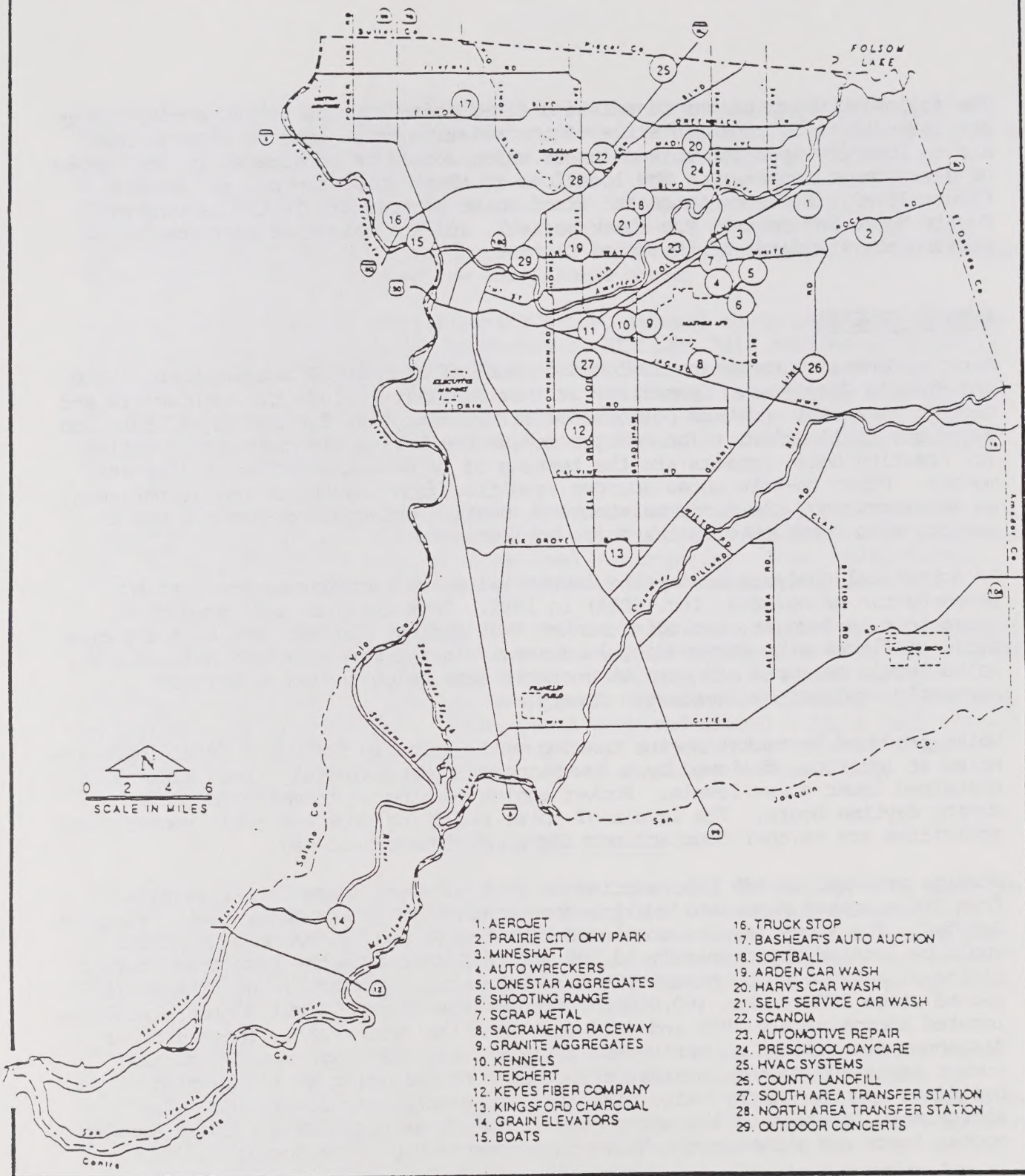


Figure III-3

FIXED NOISE SOURCES

Prepared by the Sacramento County Planning and Community Development Department

PRAIRIE CITY OFF-HIGHWAY VEHICLE PARK

The Prairie City Off-Highway-Vehicle (OHV) Park is located south of White Rock Road at Prairie City Road. Activity at the OHV park includes 4-wheel drive (4WD) "Mud Drags", motocross and other off-road vehicle activities. Noise level measurements made in 1982 of Prairie City OHV activities were used to generate noise contours for the facility. This facility was effectively closed for about 4 years, and has recently been reopened under State ownership. An EIR is being prepared for the renewed operations which will describe current activities and noise impacts. The 1982 noise contours which are plotted in Noise Environment Map (back pocket) illustrate the impacts of a race day with all tracks in use.

Contact: Sacramento County Department of Parks and Recreation

FAMILY RECREATION FACILITIES

The Mineshaft family recreation facility is located on Mineshaft Blvd. east of Sunrise Blvd. The facility contains a miniature golf course, arcade, batting cages, attack tanks, carnival rides and go carts. Hours of operation are 11 am - 10 pm Monday through Sunday and 10 am - 12 midnight on Fridays and Saturdays. Noise measurements were conducted on October 28, 1989, at the perimeter of the Mineshaft. The most significant noise source during the measurements was the carnival, which was a seasonal use. The noise produced by regular Mineshaft activities could not be accurately determined because of masking by noise from traffic on Highway 50.

SOFTBALL GAMES

Softball games and other organized outdoor activities produce unacceptable noise levels in residential areas. Crowd noise from softball games has been measured at up to 70 dBA at 350 feet from the bleachers. Area residents may complain about crowd noise, particularly if the event persists beyond 10 pm. In general, organized outdoor activities should be evaluated to determine whether crowd noise will exceed acceptable noise levels at adjacent residential uses, and such activities should be regulated as appropriate.

AUTO DISMANTLERS

Sunrise Auto Dismantlers is located at the corner of Sunrise Boulevard and Rebel Hill Road. Operations at this facility consist of auto dismantling and selling of used auto parts. Typical hours of operation are Monday through Saturday 8 am - 5:30 pm. Noise is generated at this facility by daily forklift and annual crushing operations. Because noise generated at Sunrise Auto Dismantlers was masked by Sunrise Boulevard traffic noise, no noise measurements were conducted at the site in 1989.

There are several other auto dismantlers along Recycle Road in the vicinity of Sunrise Auto Dismantlers. These include G. M. Auto Recycling, C & C Auto Wrecking, American River Auto Dismantling, Mazda Auto Recycling, Used Honda

Parts, Fair Oaks Truck Wrecking and Pick and Pull Auto Dismantling. These operations exhibited similar characteristics as the Sunrise Auto Dismantlers, with forklifts being the primary noise sources. The Recycle Road area is well suited for these types of light industrial uses due to the presence of other significant noise sources such as Sunrise Blvd and Lone Star Aggregates, and because these uses are not considered noise-sensitive.

Although these auto dismantling operations do not individually produce significant noise levels, their collective noise output and that of Sunrise Blvd and Lone Star Aggregates is significant. Introduction of noise sensitive uses into this area should not be allowed without careful consideration of existing noise impacts.

Contact: Jack Withersby

AGGREGATE PLANTS

Lonestar Aggregates is located on Kilgore Road west of Sunrise Boulevard and south of White Rock Road. The Lonestar plant provides ready mix concrete and aggregates. Industrial Asphalt leases Lonestar property for the production of asphalt. Hours of operation are typically 6 am - 10:30 pm as specified by the Lonestar mining permit. Noise producing equipment used at Lonestar includes the asphalt burner, shakers, front loaders, conveyors and crushers. Heavy trucks are used extensively for the transport of raw materials and refined aggregate products. Noise measurements were conducted in 1989 at three locations in the vicinity of the plant during normal plant operation. The asphalt burner and rock plant were the dominant noise sources in the vicinity of Lonestar at the time of the measurements. An average noise level of 74.5 dBA was measured at an unshielded location approximately 300 feet from the asphalt burner. Average rock plant noise levels of 57.5 and 59.5 dBA were measured at two locations approximately 1500 feet and 1200 feet from the rock plant respectively. The approximate location of the 50 dBA median noise level contour for Lonestar Aggregates is shown in Noise Environment Map (back pocket).

Contact: Lloyd Burns, Plant Superintendent

Granite Construction is located at the northeast corner of Bradshaw Road and Kiefer Blvd. The Granite plant provides ready mix concrete, aggregates and asphalt. Noise producing equipment used at Granite includes the asphalt burner, nine vibrating screens, front loaders, sixty belt conveyors and five crushers. Heavy trucks are used extensively for the transport of raw materials and refined aggregate products. Operations at Lonestar are reported to be 6 am - 9 pm. Noise measurements were conducted in 1989 at three locations in the vicinity of the plant during normal plant operation. The asphalt plant employs an "acoustic" (whisper) burner which is rated at 85 dBA at a distance of 50 feet. Asphalt plant noise levels were not audible over the rock plant levels during the site inspection. The rock plant was the dominant noise source in the vicinity of the Granite plant at the time of the measurements. An average noise level of 70.3 dBA was measured at an unshielded location approximately 500 feet

from the rock plant. A 6- to 8-foot berm has been erected around the perimeter of the Granite operation as required by the use permit. This berm provides significant shielding of Granite Construction noise levels. An average rock plant noise level of 60 dBA was measured at a shielded location (behind the berm) approximately 500 feet from the rock plant respectively. The approximate location of the 50 dBA median noise level contour for Granite Aggregates Plant is shown in the Noise Environment Map (back pocket).

Contact: Bruce Bunting, Plants Superintendent

Teichert Aggregates operates a rock and asphalt plant between Kiefer Blvd. and Jackson Highway, west of Watt Avenue. Typical hours of operation are 6 am to 10:30 pm Monday through Friday and 6 am to 3:30 pm on Saturday as specified by the mining permit. Noise producing equipment at Teichert consists of vibrating screens, conveyors, front loaders, crushers and an asphalt burner. Heavy trucks are used extensively for the transport of refined aggregates and concrete. Noise measurements were conducted in 1989 at various locations in the vicinity of the Teichert plant to assess existing noise levels. An average noise level of 69.5 dBA was measured at the main entrance gate on Jackson Highway, approximately 300 feet from the center of the main aggregate plant. The approximate location of the 50 dBA median noise level contour is shown in Noise Environment Map (back pocket).

Contact: Dale Gillaspie, Manager of Operations

SHOOTING RANGES

The Cordova Shooting Center is located on Douglas Road west of Sunrise Boulevard. The center provides facilities for small arms, rifle and shotgun firing and is open seven days per week. Hours of operation are 10 am - 5 pm Monday and Friday, 10 am - 9 pm Tuesday through Thursday, and 9 am - 6 pm on Saturday and Sunday. In late 1987, the loudest pistol observed at the Cordova Shooting Center was a .357 magnum, which registered a maximum noise level of 112 dBA at a distance of 50 feet. A 7 mm magnum rifle was the loudest of the rifles observed, registering 111 dBA at a distance of 50 feet. A 12 gauge shotgun was also observed which registered 97 dBA at 50 feet. A maximum noise level of 70 dBA could occur at a distance of one-half to one mile away, depending upon local shielding and atmospheric effects. The approximate location of the 70 dBA Lmax contour for the Cordova Shooting Center is in the Noise Environment Map (back pocket).

Contact: Pat Glaze

SCRAP METAL RECYCLING

C & C Metals operates a metal recycling facility at 11320 Dismantle Court, west of Sunrise Boulevard. The facility operates from 8 am - 5 pm Monday through Friday and 8:30 am - 2 pm on Saturday. Heavy equipment utilized at the C & C facility includes an electric 380-ton baler/shear machine, diesel forklifts and cranes. Heavy trucks are used for the delivery of scrap materials and recycled metal. At the time of a BBA site inspection in 1989 the yard was relatively quiet compared to background noise levels, and no noise measurements were conducted. BBA noise measurements in 1989 of a larger 600-ton baler/shear machine used at a similar operation resulted in average noise levels of 80 dBA at a distance of 40 feet. Because the machine at C & C Metals is smaller and electrically driven, noise levels from that unit are expected to be lower than the levels produced by the 600-ton machine.

Contact: Gary Cope, manager

RACEWAYS

The Sacramento Raceway is located on Excelsior Road north of Jackson Highway. The Raceway facilities include a quarter mile drag strip, and a midget car and motocross dirt oval track. Racing typically takes place on Wednesday and Friday nights with occasional large events on weekends. A focused EIR was prepared for the Sacramento Raceway in 1981. The conclusions of that EIR state that the cumulative noise impacts of the raceway operations are significant. BBA conducted noise measurements at the Sacramento raceway during the Governor's Cup races on September 22-23, 1989. Maximum noise levels of 130 dBA were measured at a distance of 100 feet from the dragstrip during Top Fuel Funny Car races. Maximum noise levels measured during Pro- Gas, Door-Slammer and Alcohol Dragster races registered between 100 and 120 dBA at the same location. Additional noise measurements were performed at the nearest residence. The Lmax contours prepared for the 1981 EIR are reproduced in the Noise Environment Map (back pocket), and reasonably represent 1989 activities.

Contact: Dave Smith, track owner

DOG KENNELS

The Sacramento County Animal Control Shelter is located at 4290 Bradshaw Road, north of Kiefer Blvd. The facility contains several kennels used to hold sick, lost and stray animals. Noise measurements were conducted around the perimeter of the kennels to determine the noise levels generated by barking dogs. To isolate the noise levels generated by the barking dogs, the 1989 noise measurements were limited to the area of the kennels shielded from Bradshaw Road traffic noise. Average noise levels of 80.5 and 66.2 dBA were measured at distances of 30 and 100 feet from the west side of the dog kennels, respectively, with several dogs barking. Although kennel related noise levels at the Sacramento County Shelter are masked by Bradshaw Road traffic noise, construction of similar kennels in noise sensitive areas would probably lead to noise conflicts, especially during nighttime hours.

Contact: Sacramento County Animal Control Shelter

THE KEYES FIBRE COMPANY

The Keyes Fibre Company, located at 8450 Gerber Road, manufactures paper products including plates, egg crates, and food and drink support trays. Noise measurements in 1989 yielded plant-generated noise levels of 61 and 54 dBA at distances of 200 and 300 feet from the east and west property boundaries, respectively. Distinguishable noise sources at the plant included fans, compressors, pumps, and exhaust steam.

ISLETON RIVERSIDE ELEVATORS

The Riverside Elevators are located in Isleton and provide grain storage, drying and cleaning. Operations are typically 8 am - 5 pm Monday through Friday. The peak corn harvest season is typically October through November, during which time the elevators will experience the most activity. Noise producing equipment at the Riverside Elevators includes conveyors and two large fans used for warming and cooling of the elevator contents as necessary. Noise measurements were not conducted at the Riverside Elevators because the plant was inoperative during the site inspection in September 1989. Noise levels in the immediate vicinity of the fans could be significant depending upon fan size, orientation, and the amount of shielding present.

Contact: Harry Stafford

SACRAMENTO RIVER POWER BOATS

Power boats have been identified as potentially significant producers of noise along the Sacramento River. Boat noise levels in the vicinity of marinas are not typically obtrusive due to a 5 mph speed limit. Increased boat speeds in areas removed from marinas result in correspondingly higher noise levels. Maximum noise levels of power boat operations on the Sacramento River typically range from 80 to 86 dBA at the riverbank.

TRUCK STOPS

Noise associated with truck stops is primarily defined by heavy trucks entering, idling, and leaving the facility. To prolong engine life, heavy truck engines often idle for long periods of time while parked at truck stops. Noise measurements were conducted in 1987 at the Union 76 truck stop located at the junction of West El Camino avenue and Interstate 80. An average noise level of 70 dBA at a distance of 50 feet was computed from the noise measurement results. Ten trucks idling continuously over a 24-hour period would produce an Ldn of 60 dB at a distance of approximately 1000 feet.

KINGSFORD CHARCOAL

This charcoal manufacturing plant is located east of Elk Grove on Waterman Road. The plant is currently being closed, but available noise level data illustrate the potential noise impacts of similar facilities. In 1983, this plant was the subject of citizen complaints and local planning concerns relative to an adjacent new subdivision. Noise measurements revealed that fans used for the dust collection system created noise levels exceeding 55 dBA at a distance of 1500 feet from the plant. Other major noise sources were the burner assembly and railroad siding operations. The plant was subsequently redesigned to use a pyrolysis process, and the dust collection system was modified at that time. After the plant redesign, noise complaints were eliminated. Although the Kingsford Charcoal plant is no longer a significant noise source, its history shows that fan systems and related railroad operations can be of concern to adjacent residential uses, and that effective noise control can be achieved through plant design.

ARDEN CAR WASH

Noise is generated at car wash facilities by high pressure water nozzles, automated washing equipment, vacuums and large blow dryers. Noise measurements were conducted in 1989 at the full service car wash at the northwest corner of Arden Way and Watt Avenue to quantify typical noise levels associated with these operations. Average noise levels of 76.5 dBA and 67.0 dBA were measured at distances of 30 and 60 feet from the wash tunnel, respectively. The 50 dBA Leq noise contour would be located approximately 450 feet from the wash tunnel, neglecting shielding by intervening topography and structures. The principal noise source identified during the measurements was the blower used for drying the vehicles.

PUBLIC ADDRESS SYSTEMS

Public address systems at businesses such as automobile dealerships and auction yards, industrial facilities and recreational areas are considered significant noise sources in Sacramento County. Noise levels produced by public address systems are a function of voice level, volume setting, amplifier power, shielding, wind direction and other atmospheric effects. According to Division of Environmental Health staff, PA system noise levels of 55 to 60 dBA have prompted complaints from nearby residents. The use of public address systems in the vicinity of noise sensitive developments is thus a concern. The Sacramento County noise control ordinance currently regulates noise from public address systems.

AUTOMOTIVE REPAIR FACILITIES

There are many automotive repair facilities in Sacramento County providing a variety of services. Typically the most significant noise levels are generated

by pneumatic tools. Noise measurement data collected at a Big O Tire Store in 1987 indicated that a typical impact wrench produced a maximum noise level of 73.3 dBA at a distance of 50 feet. According to the shop owner, a typical busy day could involve 30 customers with 90 tire/wheel changes. Because each tire replacement involves the removal and replacement of at least 4 lug nuts, the potential exists for sustained noise emissions from pneumatic tool usage.

HARV'S CAR WASH

Harv's Car Wash is a full service car wash located on Madison Avenue east of San Juan Avenue. Noise measurements conducted at the facility in 1989 indicated that the most significant noise producing equipment was the large blower used to dry the vehicles after the automated wash cycle. An average noise level of 65.5 dBA was measured at a position 100 feet from the rear of the wash tunnel. The 50 dBA L50 contour would lie about 600 feet from the dryer tunnel.

SELF SERVICE CAR WASH

There are many self service car washes in Sacramento County. Noise from self service car washes is generated primarily by high pressure sprayers and car vacuums. Noise measurements were conducted at the Great Western Car Wash near the intersection of Marconi and Walnut in 1989. Average and maximum noise levels of 72 and 79 dBA were measured at a distance of 15 feet during a complete self service car wash cycle. An average noise level of 73 dBA was measured 10 feet from the car vacuum. If all the car wash bays and vacuums were in use simultaneously, an average noise level of about 61 dBA would result at a distance of 100 feet.

SCANDIA FAMILY FUN CENTER

The Scandia Family Fun Center is located at 5070 Hillsdale Boulevard near the Madison Avenue overcrossing at Interstate 80. Typical hours of operation are from 10 am to 11 pm on weekends with fewer operating hours on weekdays. Facilities at Scandia include an indoor arcade, batting cages, two 18-hole miniature golf courses, bumper boats and a miniature Indy car race track. Noise at the site is dominated by traffic noise from Interstate 80. Noise measurements of various Scandia activities were conducted at the facility in 1989. Maximum noise levels of 79 to 80.5 dBA were recorded at a distance of 10 feet from the center of the mini race car track with five race cars operating. At a distance of 15 feet from the path of the bumper boats a maximum noise level of 76.5 dBA was recorded. The only other significant noise source was the batting cages. Noise measurements conducted 10 feet from the batting area recorded maximum noise levels of 72.5 to 78.5 dBA resulting from the impact of the bat and ball. Noise measurements at the perimeter of the Scandia center were not possible due to the I-80 traffic noise exposure.

SHOPPING CENTER LOADING DOCKS

Shopping centers and grocery stores are often located near residential developments, and loading dock activities usually involve heavy trucks and forklifts. Loading dock activities commonly take place in the early morning hours involving several medium and heavy trucks at a time. BBA conducted noise measurements of loading dock activities at several locations in Sacramento County in 1989. Maximum diesel truck passage noise levels ranged from 69 to 74 dBA at a distance of 100 feet. A smaller delivery truck produced a maximum level of 67.1 dBA at 50 feet. Maximum forklift noise levels ranged from 60 to 70 dBA at 100 feet.

CHILD CARE CENTERS

Child care centers are potentially significant noise sources in Sacramento County, and have generated public concern and complaints at some locations. Children using the outdoor play areas of day care centers often speak in elevated voices, or shout to be heard and/or recognized. The noise produced by equipment used at outdoor play areas, such as swings, slides, etc., is not usually significant relative to the noise generated by the children. Noise measurements were conducted at the Wonderworld Preschool and Daycare located at 7437 Sunset Boulevard in 1989 to document noise levels from children using the play area. An average noise level of 56 dBA was measured at a distance of 50 feet from the play area with 7 children playing. With 20 and 40 children playing, average noise levels are predicted to be 60 and 63 dBA, respectively, at a distance of 50 feet.

HEATING, VENTILATING AND AIR CONDITIONING (HVAC) SYSTEMS

HVAC noise sources include fans, pumps, cooling towers, compressors, condensers, and boilers. HVAC equipment is associated with virtually every type of inhabited structure, including residential, commercial and industrial uses. Large HVAC components are often housed in mechanical equipment rooms which reduce the transmitted noise. However, HVAC equipment must sometimes be located outdoors to provide adequate ventilation or heat exchange. Noise measurements of an HVAC system located on the roof a large supermarket were conducted by BBA in 1989. The evaporative condenser was found to generate the most significant noise levels at that location, measuring 61 dBA Leq at a distance of 50 feet. Because the large evaporative condensers found on most supermarkets operate over a 24 hour period, residents located near the HVAC equipment may be exposed to nighttime noise levels which could cause sleep disturbance. Noise emission data is available for most HVAC components to allow identification of potential noise impacts prior to HVAC installation.

LANDFILLS AND TRANSFER STATIONS

The Sacramento County Landfill is located at Kiefer Road near Grant Line Road in the central eastern section of the county. Typical hours of operation at this facility are from 7 am to 5 pm. The landfill is surrounded by undeveloped rolling terrain. Significant noise sources at this location include bulldozers, backup warning devices, garbage trucks, and private and commercial traffic using the landfill. Noise measurements conducted at the landfill in 1989 yielded an average noise level of 71 dBA at a distance of 100 feet from the main dump activity area. Noise impacts associated with the existing County landfill operation are not considered significant due to the absence of noise sensitive land uses in the landfill vicinity.

The South Area Transfer Station is located at 8550 Fruitridge Road in central Sacramento County. Hours of operation at that facility are from 8:30 am to 5 pm. Approximately 100 tons of garbage is transferred from this site to the landfill per day by 8 heavy trucks. Typical operations involve a vehicle arrival at the facility, parking in the designated area, waste dumping and vehicle departure. Front loaders operating in the parking and circulation area push the garbage into the tractor-trailer trucks which are parked below the loading area. A front bucket loader is used to compact the trash in the trailers. Noise measurements were conducted at the south area transfer station by BBA in 1989 to document facility noise generation. An average noise level of 75.6 dBA was measured at a distance of 50 feet from the circulation and dumping area.

The North Area Transfer Station is located at 3450 Roseville Road. The facility operates 7 days per week from 8:30 am to 5 pm. Operations at this facility are similar to the South Area Transfer Station discussed above, except that a large trash compacter is used for compacting, rather than a front bucket loader. The trash compacter is motor-driven, and forces compacted garbage into the tractor trailer trucks for transport to the County Landfill. Noise measurements were conducted at the north area transfer station by BBA in 1989 to document facility noise generation. An average noise level of 71 dBA was measured at a distance of 50 feet from the dumping area.

OUTDOOR CONCERTS

Outdoor concerts may be held in parks, stadiums, amphitheaters, specially constructed facilities and other areas. Noise may be produced by traffic, activities of patrons before and after concerts, and by the concert sound system. Noise level measurements for Cal Expo concerts by BBA and the Environmental Health Division from 1985 to 1989 have indicated that the average noise level (Leq) at the mixing booth (about 200 feet from the stage) will vary from about 90 to 105 dBA, depending upon decisions by the performers and the sound technicians. The noise levels in the community around Cal Expo have resulted in citizen complaints. Sound produced by the Cal Expo concerts has been clearly audible at nearby residences on many occasions, and the measured noise levels in the community have sometimes exceeded the standards of the County Noise Ordinance.

The complaints and noise levels associated with the Cal Expo concerts demonstrate that outdoor concerts have the potential to result in noise conflicts. The actual noise level received in the community will depend upon the source noise level (often measured at the mixing booth), whether shielding is present (barriers, buildings, etc.), and the distance to the receiving properties. At distances greater than about 1000 feet, atmospheric effects such as inversions can enhance sound transmission to distant receivers, leading to noise complaints where such problems might not have been anticipated. Noise from outdoor concerts is currently regulated by the Sacramento County Noise Ordinance.

HELIPORTS

Heliport may be operated for private business and emergency uses. Noise at heliports is primarily produced by helicopters on takeoff, landing and warm-up or cool-down procedures. Noise levels produced by individual helicopter operations may be predicted using the Federal Aviation Administration's "Helicopter Noise Exposure Curves for Use in Environmental Impact Assessment" (Report No. FAA-EE-82-16), or by computer models developed by the FAA for airports (the Integrated Noise Model, or INM) and for heliports (the Heliport Noise Model, or HNM). The FAA recommends that heliport noise levels be evaluated in terms of the intrusion of single event noise levels above the ambient noise environment, and terms of the 24-hour Leq, as described by the "Noise Assessment Guidelines for New Heliports", FAA Advisory Circular 150/5020-2.

According to the FAA data, the Sound Exposure Levels (SEL) associated with operation of a Bell 206L (Long Ranger) helicopter are about 79 dB for both takeoff and landing at a distance of 1000 feet. For a Hughes 500C, the takeoff SEL is about 77 dB, and the landing SEL is about 83 dB, both at 1000 feet.

The noise levels associated with operations at a given heliport will depend upon flight tracks, the helicopter type(s) used, the number of operations, and the time of day during which operations occur. Each of these aspects of heliport operation must be defined to assess the potential noise impacts upon noise-sensitive properties.

AIRPORTS

There are seven public use airports and two military airfields in Sacramento County. This section describes the location and nature of operations at each airport and military airfield. The CNEL contours from the current airport Comprehensive Land Use Plans (CLUP's) are shown on Pages 25-30; these contours shall be used to describe projected future operations for the purposes of the Noise Element.

SACRAMENTO METRO AIRPORT

Sacramento Metro Airport is the only air carrier airport in Sacramento County, and is located northwest of the City of Sacramento near I-5 and the Sacramento River. The airport is currently surrounded by agricultural uses. The North and South Natomas areas are currently planned for commercial and residential uses, and there is a potential for noise conflicts with the airport as these areas are further developed.

SACRAMENTO EXECUTIVE AIRPORT

This airport is located in the City of Sacramento, and is surrounded by residential, commercial, and light industrial uses. There are currently about 158,000 annual general aviation operations. Noise restrictions enforced at this airport include a noise performance standard for aircraft based upon published FAA data, curfews on touch-and-gos and practice instrument approaches, and noise abatement departure flight paths.

Noise measurements were performed continuously over two one-week periods at the north and south ends of the airport. These data were supplemented by single event noise measurements at the south end of the airport. The noise measurement results were used to calibrate the INM so that predicted single event noise level matched measured noise levels, and so that predicted CNEL values were consistent with the measured CNEL values.

RANCHO MURIETA AIRPORT

This general aviation airport is located at Pancho Murieta, about 22 miles east of Sacramento. Annual operations currently number about 31,500. There are no noise restrictions for this airport. There is an annual air show at Rancho Murieta which produces higher noise levels than shown by these contours due to the use of jet and high-powered aircraft during a three-day period.

SUNSET SKY RANCH

This general aviation airport is located east of Elk Grove on Grant Line Road. There are reportedly about 70,000 annual operations, most of which are single-engine propeller-driven aircraft. About 4 vintage "warbird" aircraft are based at the airport. There are no noise restrictions at this airport. The CNEL contours for current operations are shown on Page 30.

RIO LINDA AIRPORT

This general aviation airport is located in Rio Linda at 10th and E Streets. There are currently about 45,000 annual operations. No touch-and-go operations are allowed, and the airport is closed after 10 pm. A noise abatement departure

flight path is employed to minimize disturbance at a nearby school. The CNEL contours for current operations are shown on Page 28.

NATOMAS FIELD

This airport is a general aviation facility which has about 55,000 annual operations. About 30% of the operations are touch-and-go training by single-engine aircraft. A low altitude (800 feet) pattern is used, with the downwind leg about 2500 feet east of the airport. There are no noise restrictions at this airport.

FRANKLIN FIELD

This general aviation airport is located east of I-5 near Twin Cities Road, and experiences about 50,000 annual operations, most (90%) of which are touch-and-go training operations. There are no night operations, as there are no lights at the airport. The CNEL contours for current operations are shown on Page 29. The airport Master Plan provides for lights to be installed on the north-south runway at some time in the future. When this occurs, the relative number of operations on that runway may increase, which would affect the shape of the CNEL contours.

McCLELLAN AIR FORCE BASE

Ldn contours were developed to describe the effects of McClellan Air Force Base operations, and were published in the 1983 AICUZ (Air Installation Compatible Use Zone) report. The AICUZ noise contours were converted to CNEL, and were included in the 1987 Airport Land Use Commission Comprehensive Land Use Plan (CLUP) for the McClellan AFB environs. These contours are presumed to represent the noise produced by current operations at McClellan AFB. The CNEL contours from the CLUP are on Page 26.

MATHER FIELD

Mather Air Force Base closed September 30, 1993. Ldn contours were developed to describe the impacts of Mather Field operations, and were published in the 1981 AICUZ (Air Installation Compatible Use Zone) report. The AICUZ noise contours were converted to CNEL, and were included in the 1987 Airport Land Use Commission Comprehensive Land Use Plan (CLUP) for the Mather Field environs.

To assist in land use planning for the Mather Field environs after base closure, CNEL contours were prepared for three possible scenarios of airport operations. The assumptions for potential use of Mather Field after base closure were developed by Brown-Buntin Associates, Inc. in cooperation with staff of the Sacramento County Department of Airports. A primary assumption of the analysis is that the airport will supplement existing airports in the area, rather than replace any of them.

For the baseline scenario (Figure III-4), the following assumptions were made:

1. Air traffic demand represents projected 1995 conditions.

2. General aviation (GA) demand matches 1995 traffic projections in the El Dorado County airport feasibility study prepared in 1987.

3. An Air National Guard unit uses C-130 aircraft. Operations are based upon an existing ANG unit in a city of comparable size to Sacramento.

4. The Air Force Reserve 940th Air Refueling Group operates 10 KC-135E aircraft at Mather Airport.

5. Civilian and military training demands are similar to those projected for Sacramento Metro Airport for 1995.

6. General aviation jets failing to meet the Sacramento Executive Airport noise standards are based at Mather Airport.

7. Air cargo operations are similar in magnitude to existing demand at Metropolitan Oakland International Airport.

The ultimate traffic demand at Mather Airport is described by proportionately increasing to capacity the number of operations derived for the baseline scenario. The potential noise impacts of short-term demand are estimated through another scenario developed to represent 50% of the 1995 baseline traffic projections.

The aircraft operational assumptions for each scenario are shown by Table III-3. General aviation aircraft mix was taken from the El Dorado County airport feasibility study. Civilian training, military training and "banned" GA jet mix data were taken from the 1989 Sacramento Metro Airport Data Base Update prepared by KPMG Peat Marwick. Air cargo operations were assumed to be 50% wide body and 50% narrow body as consistent with other air cargo hub operations.

TABLE III-3
AIRCRAFT OPERATIONAL ASSUMPTIONS: MATHER AIRPORT SCENARIOS

	Annual Operations by Category - - - - - - - Scenario - - - - - - -		
Category	Short-Term	Baseline	Capacity
ANG (C-130)	3,450	6,900	10,350
KC-135E	3,650	7,300	14,600
General Aviation	77,500	155,000	232,500
Civilian Training	4,063	8,125	12,188
Military Training	7,000	14,000	21,000
Banned GA Jets	1,200	2,400	3,600
Air Cargo	3,650	7,300	10,950

The CNEL contours produced using the INM with the above assumptions are presented in Figures III-4 through III-6. These contours are not definitive statements of the expected noise impacts of Mather Field use after closure as a military base, but they illustrate the potential area of noise impacts if Mather Field is used as a public airport to meet the assumed future traffic demands. Specific proposals to utilize Mather Field as a public use airport will require a detailed analysis of air traffic demand to develop CNEL contours for the resulting aircraft fleet mix and level of operations.

COMMUNITY NOISE SURVEY

A community noise survey was conducted to document noise exposure in areas of the community containing noise sensitive land uses. For that purpose, noise sensitive land uses in Sacramento County were considered to include residential areas, schools and hospitals.

Noise monitoring sites were selected to be representative of typical conditions in the community. Community parks were commonly used as monitoring sites so the sound level meters could be placed where street traffic would not bias the measurement results. Parks also provided easy access and parking at any time of the day or night.

Short-term noise monitoring was conducted during the months of July through September. Each site was monitored three different times during the day and night so that valid estimates of Ldn could be prepared. Ten long-term noise monitoring sites were established to record day-night statistical trends during the same period. The data collected included the Leq and other statistical descriptors. Noise monitoring sites, measured noise levels and estimated Ldn values at each site are summarized in Tables III-4 and D-2; monitoring sites are shown by Figure D-2. Figure D-1 illustrates ambient noise levels at the long-term monitoring sites over typical 24-hour weekdays.

Community noise monitoring systems were calibrated with acoustical calibrators in the field prior to use, and comply with all pertinent requirements of the American National Standards Institute (ANSI) for Type I sound level meters.

The community noise survey results indicate that typical noise levels in noise sensitive areas of Sacramento County are in the range of 50 dB to 60 dB Ldn. Noise from traffic on local roadways and industrial sources is the controlling factor for background noise levels in the county. In general, the areas of Sacramento County which contain noise sensitive uses are relatively quiet except near major roadways, airports, railroad tracks, industrial areas and fixed noise sources.

Oversized Map or Foldout not scanned.

Item may be viewed at the
Institute of Governmental Studies Library, UC Berkeley.

Oversized Map or Foldout not scanned.

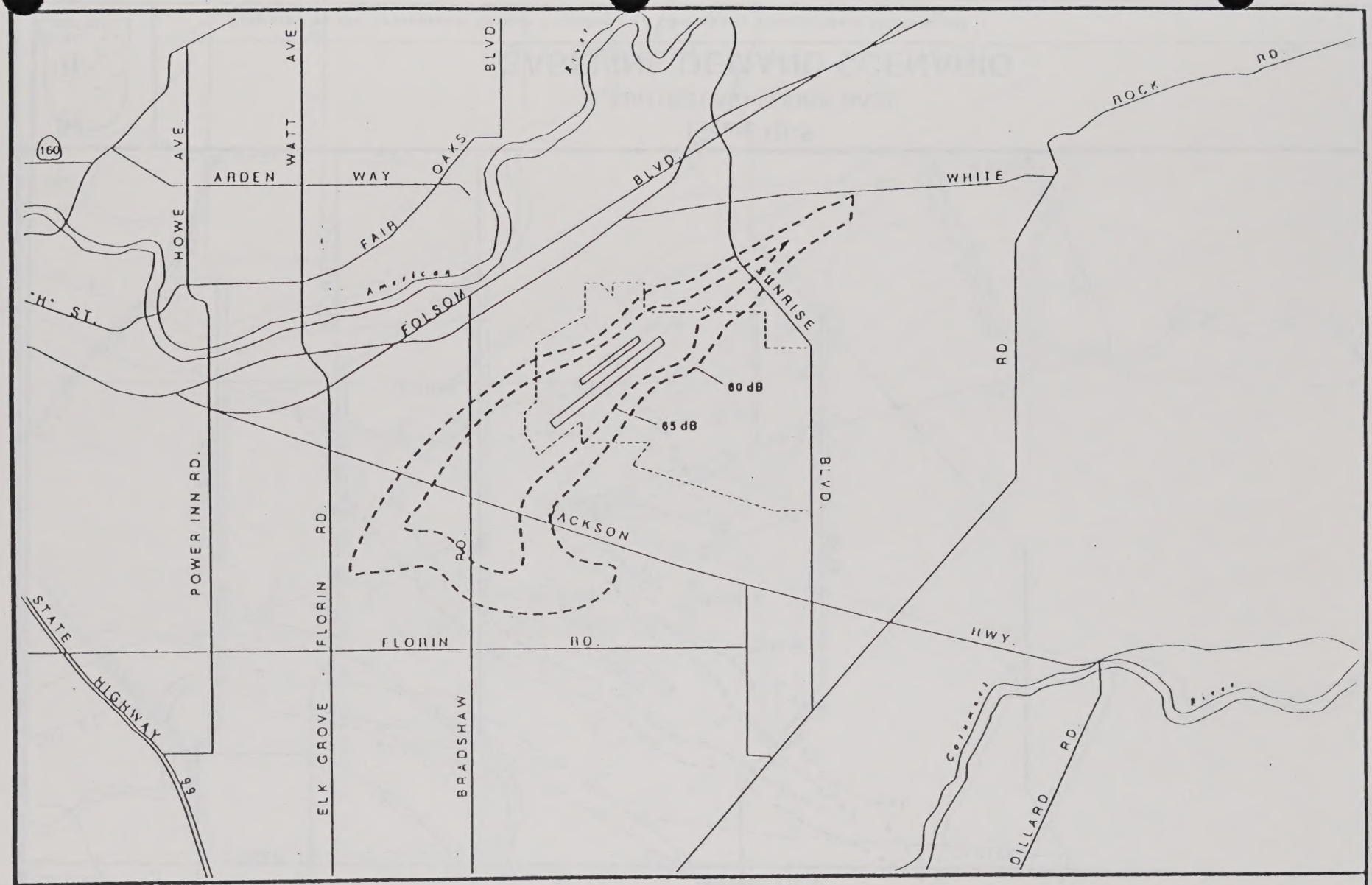


Figure III-4

MATHER AIR FORCE BASE

SHORT TERM DEMAND SCENARIO

Prepared by the Sacramento County Planning and Community Development Department

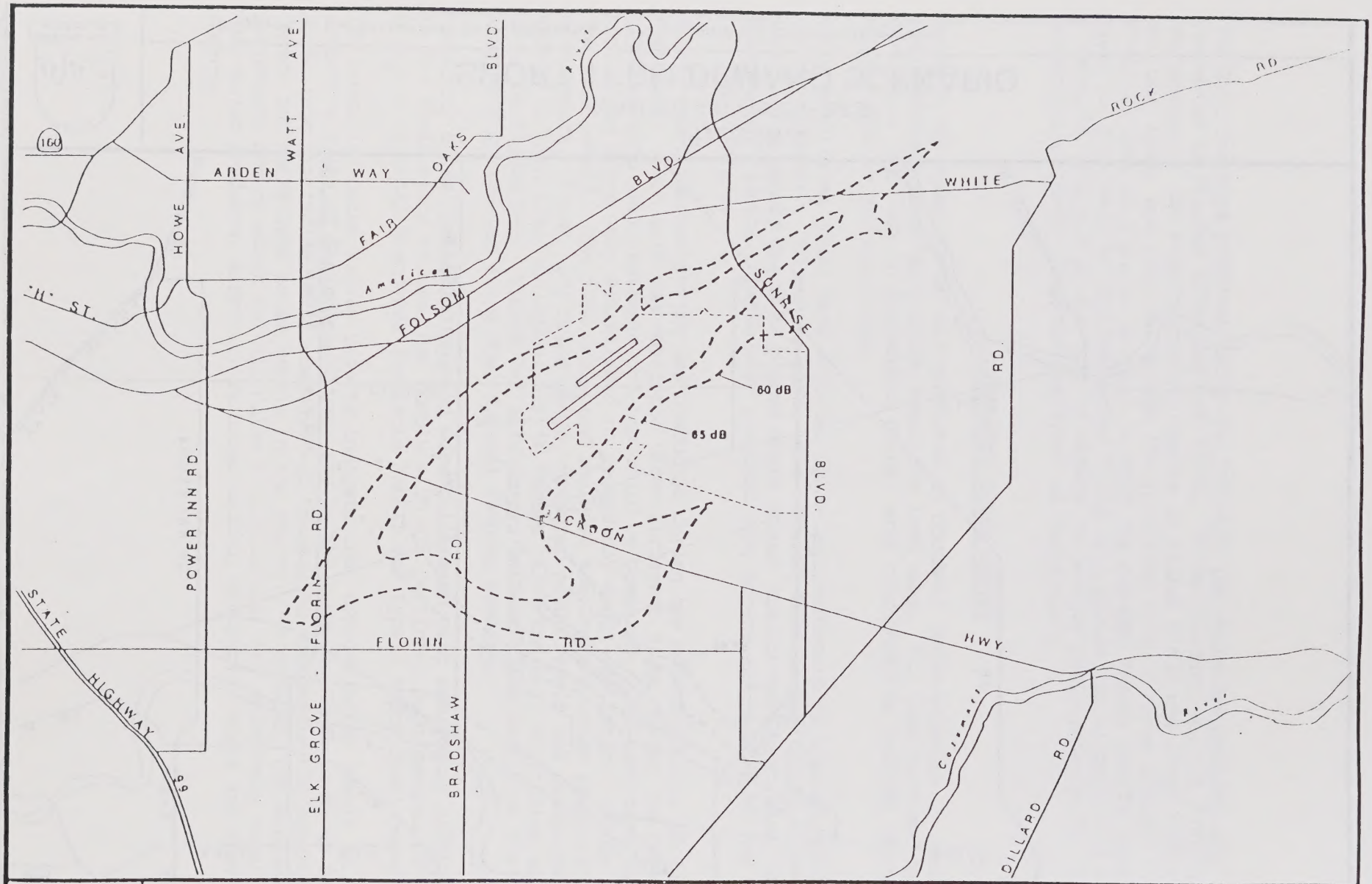


Figure III-5

MATHER AIR FORCE BASE

BASELINE DEMAND SCENARIO

Prepared by the Sacramento County Planning and Community Development Department

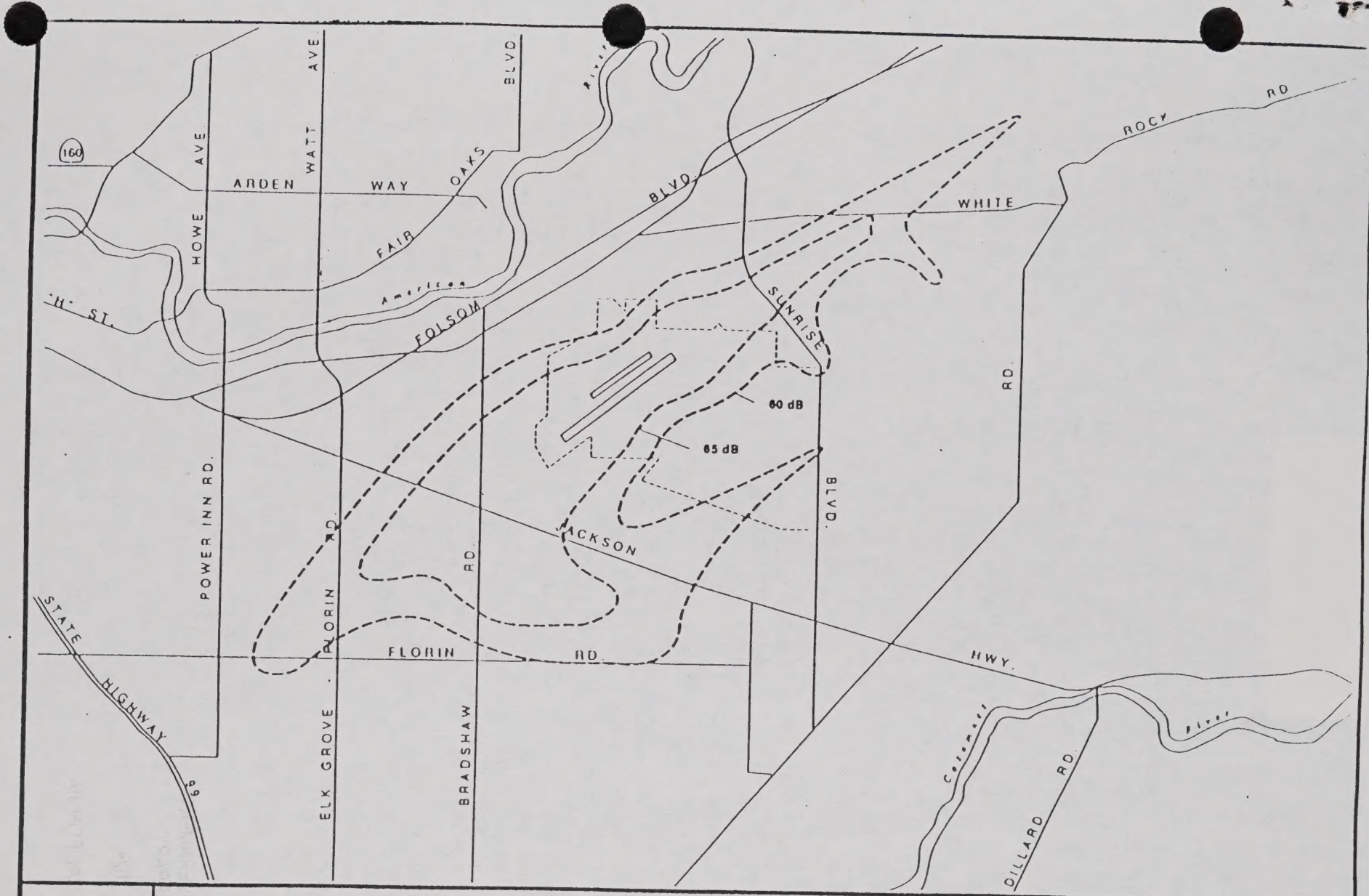


Figure III-6

MATHER AIR FORCE BASE

AIRFIELD CAPACITY SCENARIO

Prepared by the Sacramento County Planning and Community Development Department

96 00234.9

U.C. BERKELEY LIBRARIES

C123311639

The L90 values shown in Table D-2 represent background noise levels, where there are typically no identifiable local noise sources. The L50 values represent median noise levels, which are the basis for the Sacramento County Noise Ordinance. These data show that ambient L50 values are typically below the 55 dBA daytime and 50 dBA nighttime standards of the Noise Ordinance. The Leq values in Table D-2 represent the average noise energy during the sample periods, and show the effects of brief noisy periods. The Leq values were the basis of the estimated Ldn values. Lmax values show the maximum noise levels observed during the samples, and are typically due to passing cars or aircraft.

The data in Figure D-2 show that ambient noise levels reach a minimum during the hours of 1-4 am, increasing during the daytime hours as a function of increased traffic and other human activities.

TABLE III-4

24-HOUR WEEKDAY NOISE MEASUREMENT RESULTS* AT NOISE SENSITIVE AREAS IN SACRAMENTO COUNTY

Site	Address	Area	Ldn, dB
1	9443 Polhemus Drive	Elk Grove	71.8
2	12505 Lee School Road	Wilton	58.8
3	4364 Oxwood Way	Rosemont	62.9
4	4601 Rustic Road	Carmichael	54.3
5	1141 La Sierra Drive	Arden-Arcade	51.4
6	2740 Lerwick Road	Arden-Arcade	64.2
7	9478 Central Avenue	Orangevale	53.0
8	7504 Chicory Court	North Highlands	69.0
9	6105 West 6th Street	Rio Linda	67.6
10	310 B Street	Isleton	55.7

* For 24-hour graphs of data for these locations see Figure D-1 in Appendix D.

INSTITUTE OF GOVERNMENTAL STUDIES LIBRARY

OCT 18 2024

UNIVERSITY OF CALIFORNIA